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GEOLOGY.—*Lower limit of the Cambrian in the Cordilleran region.*[1] CHESTER R. LONGWELL, Yale University. (Communicated by James S. Williams.)

Cambrian and older rocks are widely distributed in the Cordilleran region, through thousands of miles in length and hundreds in width. The stratigraphic horizons of critical interest to our problem are particularly well displayed, (1) in British Columbia and (2) in the Basin and Range province of the United States, the area to which my first-hand acquaintance is limited, and to which most of my comments are restricted.

Current paleogeographic maps represent a Lower Cambrian seaway advancing northeastward across much of the present Great Basin area, another southward across western Canada (Deiss, 1941). Deposits that record this early history are characterized by the *Olenellus* fauna; some earlier strata also commonly have been included. These were laid down on thick formations that commonly are classed as Precambrian, such as the Belt series of Montana and British Columbia which had been little deformed, and generally similar deposits in the Death Valley region that had been faulted, highly tilted, and otherwise disturbed. The concept of land areas of the time rests in part on facies relations, but in part merely on presently known distribution of outcrops; for example, the western limit of the southern seaway at the Nevada-California state line is shown almost exactly on the location of the thickest known section of the fossiliferous Silver Peak formation. This limit is kept in Deiss's synthetic map for all Cambrian seaways (1941, fig. 1). There is clear evidence of progressive overlap northward across what Deiss has called Montania, and eastward in the Colorado Plateau and Rocky Mountain areas. On the west, however, the evidence on Cambrian geography is very vague indeed, since the older formations either end abruptly against plutonic masses, as at the border of the Sierra Nevada, or disappear under younger Paleozoic, Mesozoic, and Cenozoic cover, including the widespread Columbia River basalt. Nolan's sections (1928) show the clear relations in western Utah and eastern Nevada, and the lack of information in northern California, where Devonian beds rest on metamorphic and volcanic rocks. We know there was early Paleozoic volcanism in the coastal belt, and probably there was orogeny also. Eardley (1947) has offered a modification of Nolan's sections, suggesting that the Salmon and Abrams schists, of the Klamath region, may represent a westward continuation of known Cambrian and late Precambrian formations. It is not assured that continuous land bordered the Cordilleran geosyncline on the west.

However, more tangible evidence for our purpose lies inland. Stratigraphic relations are comparatively simple in the wide area traversed by the Grand Canyon, where little-deformed Cambrian beds lie across steeply tilted strata of the Grand Canyon series, which in turn rest on Archean schist, gneiss, and granite. The unmetamorphosed but strongly deformed Grand Canyon series is by general agreement Precambrian. In the overlying, nearly horizontal beds Cambrian faunas are found throughout the length of the Grand Canyon, although the lowest formation, the Tapeats sandstone, is apparently devoid of fossils. In the eastern part of the district the lowest significant fauna, found in the Bright Angel shale 135 feet above the Tapeats sandstone, indicates Middle Cambrian age. Near the mouth of the canyon the same faunal zone is more than

[1] Part of a symposium on "Base of the Cambrian System," held by the Geological Society of Washington, April 11, 1951.

400 feet above the Tapeats and above thin-bedded sandstone that contains a Lower Cambrian *Olenellus* fauna (McKee, 1945). Fifty miles farther west, at Frenchman Mountain in southern Nevada, the *Olenellus* faunal zone lies within the shale 80 feet above the Tapeats sandstone (Wheeler, 1947), which there rests on the Archean complex.

From Las Vegas westward the older part of the section thickens tremendously, with addition of formations whose age is uncertain. In sections east of Death Valley the *Olenellus* fauna has been reported from only the upper 900 feet of the Wood Canyon formation (Nolan, 1929; Hazzard, 1938), below which lie the Stirling-quartzite, 4000 feet thick, the Johnnie formation, 2,500 to 4,000 feet, and the Noonday dolomite, 1500 feet. Thus in these sections 8,000 to 9,000 feet of strata, largely clastic, underlie without obvious angular unconformity the lowest beds now known to contain *Olenellus*. This thick section lies with strong angular discordance on another series, thousands of feet thick, which Noble (1934) has suggested may be related to the Upper Precambrian formations in the tilted fault blocks of the eastern part of the Grand Canyon. These formations of the Death Valley region consist of sandstone, shale, and carbonate beds, as free from metamorphism as the younger series that leads up to *Olenellus*. The structural discordance, however, is emphatic, and largely on this basis a number of geologists have chosen the base of the Noonday dolomite as the base of the Cambrian system. The reasoning, presumably, has been about as follows: Development of an erosion surface across the strongly tilted and faulted sedimentary series in the Death Valley region and in the Colorado Plateau, with complete removal of these formations in a wide intervening area, indicates long-continued emergence of western North America. Resubmergence and renewed sedimentation, with progressive onlap eastward, marks a major physical change which logically may be taken as the start of a new geologic period and era. Those who have held this view probably explain the lack of fossil record through a large thickness of the younger section by a combination of circumstances. Conditions in this region may have been unfavorable for kinds of living forms that would leave a record, or at least for preservation of any record. The last point applies logically to the Noonday dolomite and the Stirling quartzite, both of which have lithology notably unfriendly to the fossil hunter. The Johnnie formation, on the other hand, consists in large part of thin shale, sandstone, and scattered carbonate beds, which theoretically should be favorable for preservation of fossils. It may be urged, however, that in most early Cambrian sections fossils are not plentiful at best, and that not enough intensive work has been done in the region to warrant our writing off the Johnnie as a barren formation. This argument of course is largely negative.

Let us look at the sections farther west. In the Panamint Range, according to Hopper (1947), there is no Noonday dolomite, and a much thinned Johnnie formation rests on tilted strata that presumably are Precambrian. In this part of the region, therefore, the floor on which deposition of the higher series began was very irregular. However, no evidence has been found to suggest abrupt relief—the Johnnie beds contain no coarse-grained deposits.

The Inyo and Silver Peak ranges display the sections made classic by the early work of Turner (1909) and Walcott (1908). The Silver Peak series is of particular interest because fossils in relative abundance range through so large a part of its thickness. H. E. Wheeler, after a recent visit to Walcott's Waucoba Springs locality (1948), pronounced the section too complex structurally to be used as a satisfactory standard without more comprehensive field studies. However, Knopf and Kirk (1918) found at Andrews Mountain a more complete section, apparently free from repetition by faulting. Kirk states that the total thickness is 7000 feet or more, of which about a fifth consists of carbonate beds. According to Walcott the genus *Olenellus* ranges through nearly 5000 feet, and other forms, including the trilobite *Holmia* and the brachiopod *Obolella*, reach at least 1200 feet lower. Abundant forms reported by Walcott and Kirk as "corals" (Knopf and Kirk, 1918, p. 31)—probably archaeocyathids—suggest reef structure. In short, the thick deposit appears to be almost entirely of marine origin.

The Silver Peak beds overlie the Campito sandstone, a fine-grained crossbedded sandstone, some of it quartzitic, typically in thick beds. Even in this sandstone Kirk reports numerous markings which he diagnosed as tracks possibly made by trilobites. Walcott (1908, p. 12) reported from some Nevada localities, in the Prospect Mountain quartzite, trails that he interpreted as marks made by trilobites.

On both physical and organic evidence, the Wood Canyon formation is logically correlated with the Silver Peak beds. Wheeler draws the base of the Cambrian at the lowest horizon from which *Olenellus* has thus far been reported, about 350 feet above the base of the Wood Canyon formation. However, in the evidence presented by Kirk and Walcott there is a suggestion that arthropods—genus unknown—lived during deposition of the Campito sands, in a section much more marine in character than corresponding sections near Death Valley. Although we might assume that marine fossils never will be found below the base of the Wood Canyon beds, their absence could mean simply that the environment of deposition was inhospitable for life that existed at that time. It would indeed be remarkable to find well preserved fossils in the Stirling quartzite in which the thick beds, abundant cross beds, and commonly conglomeratic texture suggest turbulent, perhaps deltaic conditions under which remains of living forms, even if they were present, would have had little chance to be preserved. Wheeler himself (1947) notes that at Frenchman Mountain he was able to find *Olenellus* only in a zone 32 feet thick, 80 feet above the base of the green shale and 390 feet above the basal unconformity. Yet there he pronounces (with good reason) all of these barren beds Lower Cambrian, whereas he relegates to the Precambrian a smaller thickness of the Wood Canyon formation in the Nopah Range, solely on the ground that search in this part of the section has not as yet revealed *Olenellus*.

Wheeler and Beesley (1948) represent diagrammatically the concept, which has long been widely accepted, of progressive onlap from a basin of deposition across an adjacent land. The land mass shed sediments into the basin, and was at last covered through lowering by erosion combined with rise of the sedimentary column. Beds that carry typical Lower Cambrian fossils at Frenchman Mountain and near the mouth of the Grand Canyon look almost identical in lithology and in their relation to the basal unconformity, to beds in the eastern part of the Grand Canyon that carry a Middle Cambrian fauna. Moreover, we can endorse the suggestion of Wheeler and Beesley that near Death Valley beds lower than the Wood Canyon formation—say in the lower part of the thick Stirling quartzite—were deposited somewhat earlier than the Lower Cambrian beds at Frenchman Mountain. But classification of the Stirling quartzite as Precambrian requires (1) acceptance of *Olenellus* as the *sine qua non* in determining Lower Cambrian age, and (2) assumption that all diagnostic fossils in this part of the section have been found. It may be suggested, in opposition to the "*Olenellus* school," that trilobites other than *Olenellus* may play a part in the diagnosis of beds as Lower Cambrian. Walcott (1915) reported that at Barrel Spring, near Silver Peak, he found the genera *Nevadia* and *Holmia* at considerably lower horizons than *Olenellus*. Still other fossil forms conceivably may be championed as of some importance in this matter, in addition to certain physical criteria to be mentioned presently.

It is by no means assured that the Johnnie and Noonday formations have the simple physical relationship to higher formations that ordinarily are suggested in regional diagrams. Knopf and Kirk (1918) report that in the Inyo region deep erosion preceded deposition of the Campito sandstone, with complete removal locally of a thick formation that may correlate with the Johnnie deposits. Moreover Hazzard (1938) cites some evidence for unconformity at the base of the Stirling quartzite in the Nopah Range; beds with contrasting lithologies appear below the contact at outcrops not far separated, and there is a suggestion of slight angular divergence between the upper Johnnie and the lower Stirling beds. We are reminded that the contact between the Cambrian and the Belt series of Montana was thought to be an inconspicuous disconformity until regional studies demonstrated a major, even though gradual, angular dis-

cordance. In the structurally broken Death Valley region there is less opportunity for such a regional check.

It is quite possible, then, that the Noonday and Johnnie formations belong to an earlier episode of sedimentation, which was followed by crustal warping, erosion, and renewed basining. On the other hand the Stirling quartzite appears to have initiated a consistent chapter of sedimentation which was remarkably uniform over a wide region. As Wheeler notes, the name Prospect Mountain quartzite (or sandstone) may well be applied to the initial deposit of this episode, from eastern California, through southern and central Nevada, western Arizona, western and northern Utah, to southeastern Idaho. The several names Campito, Stirling, Tapeats, Prospect Mountain, Brigham have been applied to this highly siliceous accumulation, which presumably represents long-continued subaerial decay on a large landmass. Encroachment of the sea brought about assortment of these weathering products, and deposition, with progressive onlap, of the quartz sands and gravels, followed by thin beds of fine-grained clastics with sporadic carbonate layers, muds that formed greenish shales, and finally a thick carbonate section. It would be difficult to find, in the entire geologic column, a more ideal succession of strata to be termed a system. And surely the organic evidence is equally satisfactory. Fossils that have long been accepted as Lower Cambrian have been found in shaly beds near the top of the Prospect Mountain quartzite (Walcott, 1892) and equivalent units. To exclude from the Cambrian the bulk of this formation, which because of its lithology is logically barren of fossils, is to ignore completely the cogent physical relationships between this clastic deposit and the beds above it.

Therefore I would include in the Cambrian system all of the Prospect Mountain quartzite and its lithologic correlatives. This major unit in many ways constitutes an ideal basal element of the system. However, there is not yet a firm basis for drawing a definite lower boundary of the Cambrian in the Death Valley region. I believe that at present the Johnnie formation and the Noonday dolomite, together with the Deep Springs formation and the Reed dolomite of the Inyo region, should be carried under the heading "age unknown." Designation of these units as definitely Precambrian does not seem warranted by the evidence now available.

Literature describing relationships of the Windermere series to lower and higher stratigraphic units in the northern Rocky Mountains suggests conditions very similar to those in the Basin and Range province discussed above. However, analysis of the problem for the northern Cordillera will be left to students who have firsthand acquaintance with that region.

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PALEONTOLOGY.—*Remains of Devonian fishes from Texas.* DAVID H. DUNKLE, U. S. National Museum,[1] and JOHN A. WILSON, University of Texas.

Two papers on Paleozoic rocks of central Texas (Cloud, Barnes, and Warren, 1945, and Cloud and Barnes, 1948) include description of rocks of uncertain age containing bones which are herein identified by Dunkle as Upper Devonian. First mention of the bones is found in Cloud, Barnes, and Warren (1945, p. 174): "A slab of conodont- and bone-bearing calcareous and phosphatic rock (16-T-33D)[2] was found and collected by Barnes and Warren while they were mapping the Ordovician-Carboniferous contact near Elm Pool, Blanco County, on May 14, 1942." Somewhat later "three other localities were found at which similar conodont- and bone-bearing rock occurs: 16T-2-25B, 16T-1-32C, and 16T-2-27$_1$A."[3] Conodonts from the original bone-bearing slab were determined by W. H. Hass (memorandum to H. D. Miser dated March 2, 1945) to be of both "Mississippian" and "Devonian" types. Macrofossils from the third locality were recognized positively by Dr. G. A. Cooper (letter to Cloud, February 27, 1945) as of earliest Mississippian age. The conclusion drawn by Cloud, Barnes, and Warren (1945) was that the conodonts and macrofossils (invertebrates) dated the rocks in question as earliest Mississippian.

The extensive report of Cloud and Barnes (1948, dated 1946), "The Ellenburger Group of Central Texas," contains additional information concerning the bone-bearing beds. Cloud and Barnes (1946) elevate the Ives breccia of Plummer (Bullard and Plummer, 1939) to formational rank. The relationship of the "bone bed" to the Ives breccia is described (Cloud and Barnes, 1946, pp. 46–47) as follows: "Locally, the breccia seems to grade laterally into or to overlie or underlie a reddish-brown, olive-gray, brownish, or yellowish impure limestone or phosphatic rock containing conodonts, fragments of bones, phosphatic pellets, and sand grains. Apparently more than one "bone bed" is involved, but relationships are obscure."

The purpose of this paper is to present what small amount of information is obtainable from the bones and the implications that can be drawn from them.

Dinichthys cf. **terrelli** Newberry

The recognizable remains include six fragments of the dermal armor of a large placodermatous fish. Four of these six broken and eroded pieces of bones, all from locality 16T-2-33D, can be readily identified as characteristic portions of arthrodiran plates, a fragmentary left paranuchal (Fig. 1), a left suborbital (Fig. 2), a left inferognathal (Fig. 3), and a right interolateral (Fig. 4). Comparative examinations prompt provisional reference of the four to a form closely allied to the well-known brachythoracine *Dinichthys terrelli* Newberry. The present materials are illustrated imposed on outlines and appropriate sections of complete elements of the latter species. For the purpose of this note further description is unnecessary.

FIG. 1.—*Dinichthys* cf. *terrelli* Newberry (U.T.-B.E.G. no. 40100): Left paranuchal plate fragment in internal aspect. Reproduction approx. × 2/5.

[1] Published by permission of the Secretary, Smithsonian Institution.

[2] The Bureau of Economic Geology, University of Texas, uses a system of locality numbers in which each of the 254 counties of the State is assigned a number, Blanco County being number 16. The "T" stands for Texas, and the remainder of the number designates the position within a county as recorded on aerial photographs for central Texas.

[3] Locality descriptions are given in detail in Cloud, Barnes, and Warren (1945) and in Cloud and Barnes (1948).

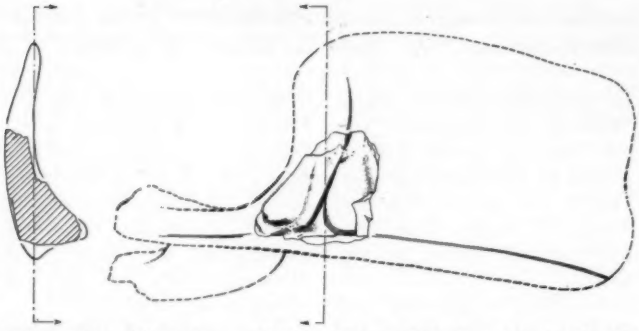

FIG. 2.—*Dinichthys* cf. *terrelli* Newberry (U.T.B.E.G. no. 40100-3): Left suborbital plate fragment in transverse section and lateral aspect. Reproduction approx. × 2/5.

It is not possible here to make more than a tentative identification. This fact is not due alone to the fragmentary nature of the material but must be coupled with various questions concerning the basic status of *Dinichthys terrelli* and its relatives. *D. terrelli*, as now recognized, is restricted to the Upper Devonian Ohio Shales formation. It, with the species *intermedius* and *curtus*, from the same strata, comprise a series of advanced *Coccosteus*-like forms, which by virtue of the numerous modifications discussed by Dunkle and Bungart (1946) is quite distinct from all the other so-called dinichthyids of the Ohio Shales (that is, *Dinichthys herzeri*, *Gorgonichthys*, *Heintzichthys*, and *Holdenius*). Though meagerly elaborated by Orvig (1951) it is possible that some of the same features noted by Dunkle and Bungart (1946) motivated Stensio's (1945) separation of the brachythoracines into the orders Coccosteiformes and Pachyosteiformes. Thus, regardless of the taxonomic value placed on the recognized differences, it is necessary that all *Dinichthys* species from North America be examined to ascertain with which group each is related. Until the task is completed, these materials from Texas can have little use in definitive stratigraphic correlations.

Arthrodira, gen. and sp. undet.

Two fragments (Fig. 5) (from locality 16T-1-32C), presumably of the same identity, are unique in the possession of extremely large denticles arranged in a single row along one of their margins. Both specimens are too fragmentary for a complete description. They are, however, relatively low asymmetrical structures with robust elliptical cross sections. The teeth are recurved, slightly compressed, indicated to be variously spaced and to vary in height from one-half to one-third the depth of the supporting

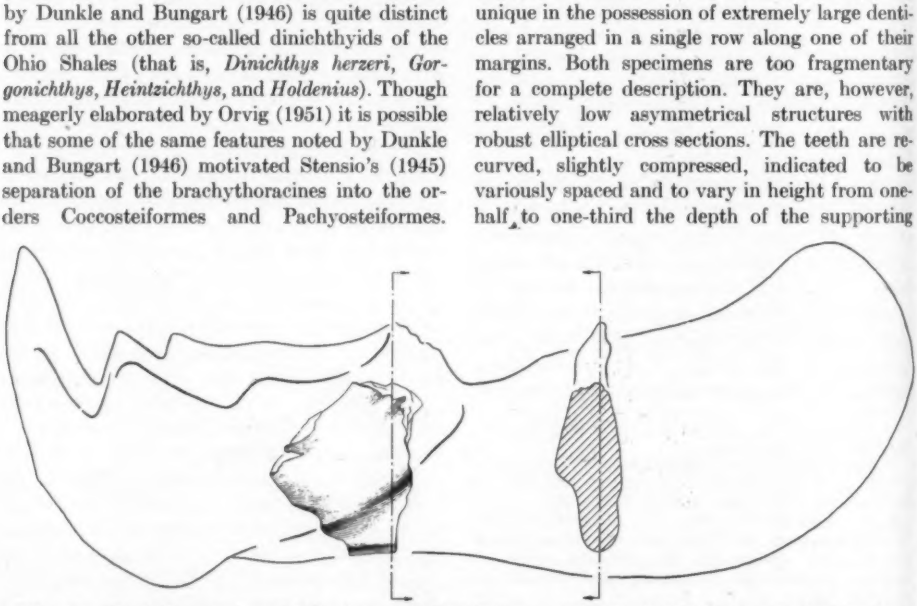

FIG. 3.—*Dinichthys* cf. *terrelli* Newberry (U.T.B.E.G. no. 40100-2): Left inferognathal plate fragment in lateral aspect and transverse section. Reproduction approx. × 2/5.

bone. They appear as projections from the bone, becoming dense and containing a pulp cavity distally.

The gross histology and over-all construction of the specimens suggest an arthrodiran mandible with teeth, rather than an ichthyodorulite. Among arthrodires with large teeth and long, low mandibles are the upper Devonian genera *Diplognathus* and *Tracheosteus*. These latter, unfortunately, are also incompletely known and it seems best to postpone identification of the Texas material.

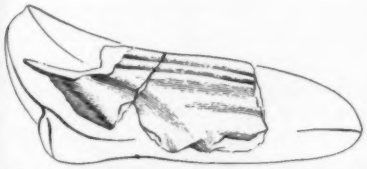

FIG. 4—*Dinichthys* cf. *terrelli* Newberry (U.T.-B.E.G. no. 40100-1): Right interolateral plate fragment in anterolateral aspect. Reproduction approx. × 2/5.

DISCUSSION

If later work shows that *Dinichthys terrelli* and its relatives are restricted to the Upper Devonian Ohio Shales formation, then the *D.* cf. *terrelli* fragments from Texas do have significance stratigraphically. That they occur with Mississippian invertebrates and conodonts seems to be proved. Where they came from, however, has not been mentioned in the literature. If a short-lived sea of Upper Devonian age occupied the area just prior to Ives breccia time and deposited a thin mantle of soft easily erodible material (that is, shale) in which the bones of the placoderms and the Devonian conodonts would be the most resistant structures, then a source for the reworked bones and conodonts would be available. This hypothesis would not seem to conflict with the reasoning of Cloud and Barnes (1948, pp. 48–49) if the long period of weathering necessary to free the chert of the Ives breccia is assumed to have taken place prior to the invasion of the supposed sea.

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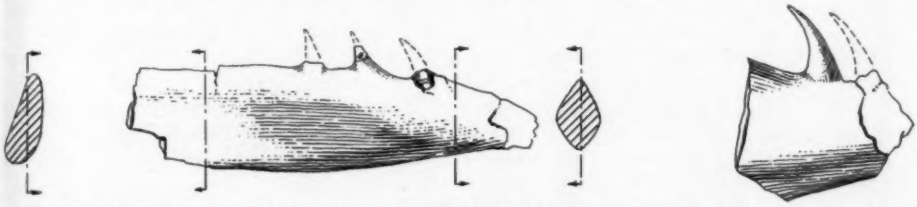


FIG. 5.—*Arthrodira*, gen. and sp. undet. (U.T.B.E.G. no. 40101): Fragments of dentate mandibular elements in transverse sections and lateral aspects. Reproduction approx. × 9/10.

PALEONTOLOGY.—*Notes on* Texacrinus. HARRELL L. STRIMPLE, Bartlesville, Okla. (Communicated by Alfred R. Loeblich, Jr.)

The author was first aware of the presence of crinoids in the Francis shale of southeastern Oklahoma with the description of *Oklahomacrinus loeblichi* Moore (1939). The specimen involved was somewhat fragmentary and did not indicate particularly lucrative collecting possibilities. Richard Alexander, at present a student at the University of Oklahoma, called my attention to the potentialities of the horizon as exposed in the brick pit just south of Ada, Okla., which is the type locality of *O. loeblichi*. Before an expediton was arranged, he and Allen Graffham, of Carter Oil Co., explored the exposed zones more thoroughly. Mr. Graffham was cognizant of special techniques needed to remove shale blocks and subsequently to expose the specimens. One fairly large pocket proved to be especially prolific in crinoid calices and crowns. It was somewhat comparable to famous crinoid "nests" of Crawfordsville, Ind., Le Grand or Gilmore City, Iowa, or Huntsville, Ala.; however, there was no associated limestones, and preservation was therefore not so perfect. Most of the material available for study was collected individually and collectively by Allen Graffham, Richard Alexander, Claude Bronaugh, and the author. Considerable time and effort have been spent in excavating the shale blocks, especially from the large colony. A thin layer of carbonaceous vegatal material marks the top of the 3- to 4-inch crinoid zone and a jumbled mass of isolated columnals and shells mark the bottom. Other smaller "nests" have been discovered at somewhat lower horizons, but the specimens are more difficult to prepare.

In the present paper an effort is made to record several new species from the Francis shale which are assigned to *Texacrinus* Moore and Plummer (1940), as well as two species from lower and higher horizons. Heretofore only one species had been described, *T. gracilis* Moore and Plummer (1940), which is the genotype species. The holotype and only specimen known at that time was a magnificent crown from the Des Moines formation of Texas, but the cup is somewhat distorted owing to lateral compression and the exact nature of the base is not known. It was interpreted, and probably correctly, by these authors that the cup had a slightly depressed base. The author has also collected a crown from the same horizon in Texas but unfortunately the lower portion of the cup is missing and if present would have been compressed in the same manner as the holotype.

A new form from the Des Moines of Oklahoma is presented as *T. associatus*, n. sp. It has a broader cup with a wider basal area than normal for the genus.

Three new species are presented from the Missouri: *T. interruptus*, *T. irradiatus*, and *T. compactus*. The first two are robust, with unusually large columns, relatively high dorsal cups, and IBB entirely covered by the proximal columnals. *T. interruptus* is distinctive in having circular depressions at the angles of the plates and strong tumidity of cup plates. The presence of these depressions, and subsequently raised areas along the sutures, is considered by the author and others as a significant specialization which is in some instances of generic importance. *T. compactus* has an unusually small stem and a more compact cup than the other species from the Francis shale.

One species is described as *T. progressus* from the Virgil series of northeastern Oklahoma. It discloses a progressive step toward elimination of the anal plates from the dorsal cup and is the only known representative of the genus to show any appreciable change in this respect.

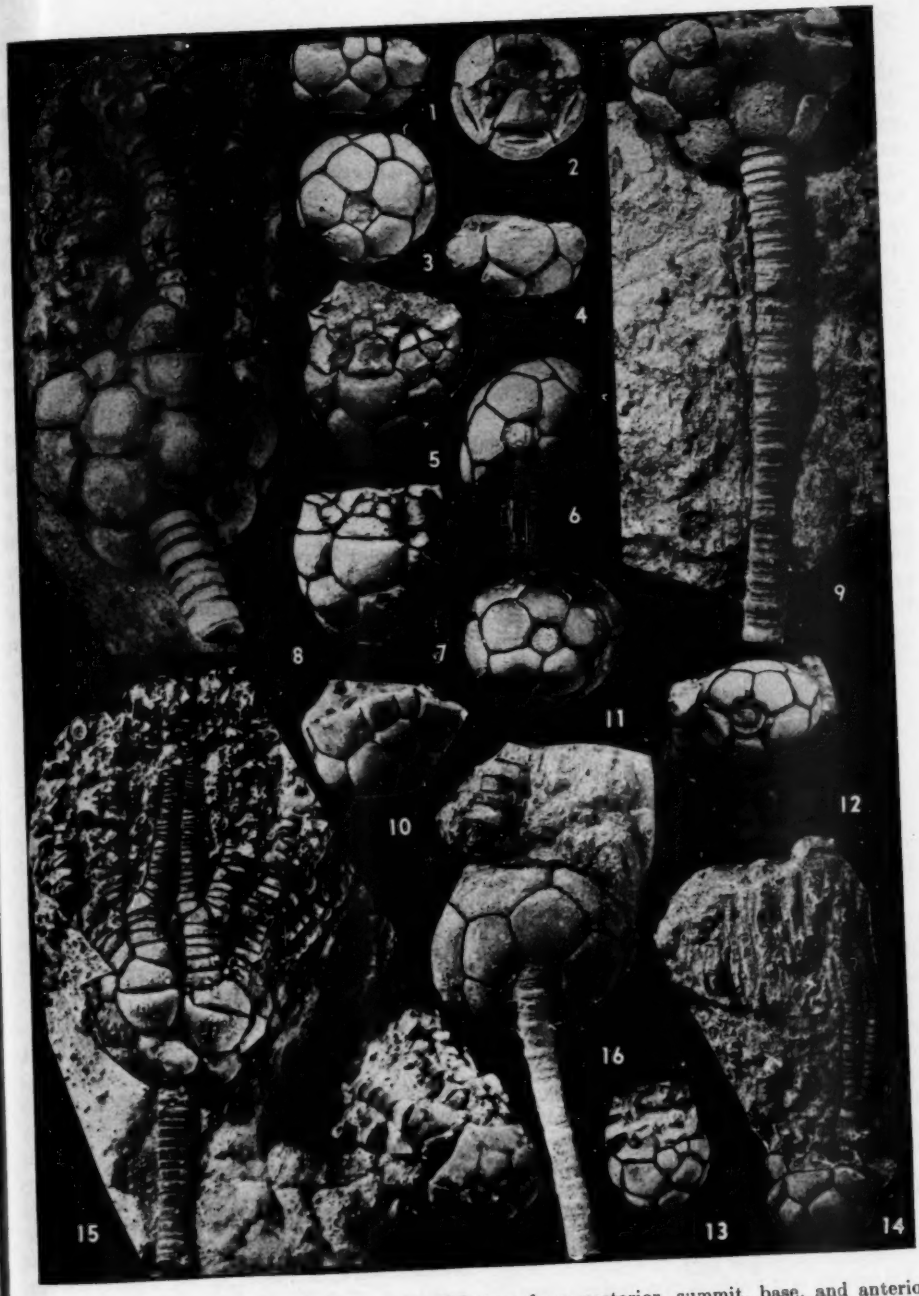
The author believes there is a close affinity to *Haerteocrinus* Moore and Plummer (1940), but this matter will be discussed at length in a later paper.

Genus **Texacrinus** Moore and Plummer

Texacrinus interruptus, n. sp.

Fig. 8

Dorsal cup has the form of a medium, basally impressed globe. All sutures are impressed, and deep round depressions are found at the angles of the plates. Infrabasals (IBB) are entirely within the basal concavity and are covered by the proxi-



FIGS. 1–4.—*Texacrinus associatus*, n. sp.; Holotype from posterior, summit, base, and anterior × 2. FIGS. 5–7.—*Texacrinus progressus*, n. sp.: Holotype from left posterior, base, and right anterior × 2. FIG. 8.—*Texacrinus interruptus*, n. sp.: Holotype from the right posterior, × 1.3; 12–14, young paratype from *Texacrinus irradiatus*, n. sp.: 9, Large paratype from right posterior, × 1.3; 12–14, young paratype from base, × 2.7, posterior and anterior, × 2; 15, holotype from right posterior (a specimen of *Aesiocrinus* sp. is also shown), × 1.2. FIGS. 10, 11, 16.—*Texacrinus compactus*, n. sp.: 10, 11, Holotype from posterior and base, × 2; 16, paratype from anterior, × 2.3.

mal columnals. Basals (BB) are five large tumid plates which curve strongly out of the depressed base and form an appreciable portion of the lateral calyx walls. Radials (RR) are five medium plates which are tumid and have articulating facets which do not fill their distal faces. Three tumid anal plates occupy the posterior interradius (post. IR). The radianal (RA) is unusually large, rests obliquely on the upper surface of post. B, and supports anal X and RX to the right and left above. Anal X is considerably larger than RX but the upper surfaces of the two plates form a common plane, above the distal extremities of the dorsal cup.

Complete arm structure is not known for this species. Axillary first primibrachials (PBrBr) are present in several rays. They are low, tumid elements. The following SBrBr are rather large and cuneiform, with well-rounded exteriors.

Sixteen or more columnals are preserved and show the unusually robust nature of the stem. A thin small columnal is succeeded by, and sharply defined from, a large thick columnal.

Measurements (in mm).—

	Holotype
Width of dorsal cup	17.5
Height of dorsal cup	10.5
Diameter of expanded proximal columnals	3.8
Length of l. post. B*	7.3
Width of l. post. B*	6.0
Length of l. post. R*	5.0
Width of l. post. R*	7.9
Length of suture between BB	3.7
Length of suture between RR	2.8

* Along surface curvature.

Remarks.—This species is more comparable to *T. irradiatus* than other described species and is readily distinguished by the strong tumidity of the cup plates, sharp definition between the alternatingly expanded columnals, and depressions at the angles of the cup plates.

Occurrence and horizon.—Upper part of the Francis shale, Missouri series, Pennsylvanian; section 4, T. 3 N., R. 6 E., brick pit south of Ada, Okla.

Types.—Holotype collected by the author. To be deposited in the U. S. National Museum.

Texacrinus irradiatus, n. sp.
Figs. 9, 12–15

Dorsal cup is in the form of a medium, basally impressed bowl. IBB are five small plates confined to the basal concavity and are almost entirely covered by the proximal columnals. BB are five large plates which participate strongly in the lateral walls of the calyx. RR are five large pentagonal plates. The outer surface of the RR continue for a short distance into the interarticulating areas so that the articulating facets do not occupy the full width of the plates. Three large anal plates are present in the post. IR. RA covers the entire upper surface of post. B and is followed above by anal X to the left and RX to the right. Anal X is the larger of the two; however, it forms a common plane with RX. The latter plate occupies a considerably higher position in relation to the basal plane of the cup. All sutures between cup plates are mildly to sharply impressed.

Thirty cuneiform arms are indicated. First PBrBr are axillary in all rays and are low wide elements. Second bifurcation takes place on or about the fifth SBrBr in all rays. Thereafter the outer rays remain unbranched, but a second dichotomy takes place in the inner rays.

The column is round and is composed of alternatingly expanded columnals. No evidence of cirri has been found. Tegmen is unknown. Crown and column are devoid of ornamentation.

Measurements (in mm).—

	Holotype	*Large figured paratype*	*Small figured paratype*
Width of dorsal cup	21.4*	30.0*	7.1
Height of dorsal cup	9.8	15.0	5.0
Diameter of expanded columnals	4.2	6.5	2.3
Width of r. ant. B†	6.5	10.0	4.4
Length of r. ant. B†	7.8	10.2	3.0
Width of r. ant. R†	10.0	12.0	4.5
Length of r. ant. R†	6.5	7.4	2.6
Length of arms (as preserved)	33.2	—	18.3
Length of suture between BB	6.0	6.9	2.2
Length of suture between RR	4.5	4.7	1.8

* Mildly distorted due to lateral compression.
† Along curvature of plates.

Remarks.—This species is the commonest representative of the genus found in the Francis shale. It is more robust than *T. interruptus*, and comparison is given under description of that species. The small figured paratype is obviously a young representative of the species in that the column remains proportionately large. The arms of the young specimen are more comparable to those of *T. gracilis* in their delicate appearance.

Occurrence and horizon.—Upper part of the Francis shale, Missouri series, Pennsylvanian; section 4, T. 3 N., R. 6 E., brick pit south of Ada, Okla.

Types.—Holotype and figured paratypes collected by Allen Graffham. To be deposited in the U. S. National Museum.

Texacrinus compactus, n. sp.
Figs. 10, 11, 16

This species is fairly abundant in the Francis shale and is characterized by the small compact nature of the cup and the comparatively small column. A complete crown has not been found but the dorsal cup is well represented and portions of the arms are known.

Dorsal cup is in the form of a medium, basally impressed truncated cone. IBB are almost entirely covered by the proximal columnals but their outer apices are visible in the shallowly impressed basal area. BB are five rather elongated plates. RR are five pentagonal plates with width slightly greater than length. There are three plates in the post. IR; RA is the largest and separates anal X from post. B, anal X is somewhat larger than RX which is to the right and forms a common plane with anal X in upper extremities.

Column is small and tapers slowly. Although the columnals are alternatingly expanded there is not the sharp differentiation between small and large segments as found in other species of the genus from the Francis shale.

Measurements (in mm).—

	Holotype	*Figured paratype*
Width of dorsal cup	12.3	13.5
Height of dorsal cup	6.7	5.8
Diameter of expanded proximal columnal	1.7	1.9
Width of r. ant. B*	5.0	5.8
Length of r. ant. B*	5.0	5.8
Width of r. ant. R*	6.0	6.4
Length of r. ant. R*	4.0	4.2
Length of suture between BB	2.5	2.9
Length of suture between RR	1.8	2.0

* Along surface curvature.

Remarks.—The compact nature of the dorsal cup and proportionately small stem distinguish this from other described species.

Occurrence and horizon.—Upper part of the Francis shale, Missouri series, Pennsylvanian; section 4, T. 3 N., R. 6 E., brick pit south of Ada, Okla.

Types.—Holotype collected by Richard Alexander. Figured paratype collected by the author. To be deposited in the U. S. National Museum.

Texacrinus progressus, n. sp.
Figs. 5–7

The dorsal cup has the form of a moderately high truncated globe. There are five IBB in the narrow basal invagination which extend slightly beyond the proximal columnal. Five BB are elongated elements forming a large portion of the outer cup walls. Five RR are wider than long. The outer surfaces carry into the interarticulating areas for a short distance along the sutures. Plates of the post. IR have an unusual arrangement. RA is large and reaches across the entire upper surface of post. B to make a broad contact with l. post. R. Anal X. is moderately large and extends well above the normal height of the cup. RX is small and is entirely separated from RA by post. R. Distal faces of anal X and RX form a common plane and are each followed by single tube plates of equal size and appearance.

All first PBrBr are axillary. They are mildly constricted in midsection in somewhat the same manner as those of *Apographiocrinus typicalis* Moore and Plummer (1940). They are of unequal length. Only a few SBrBr are preserved and were apparently cuneiform.

Tegmen is unknown. Proximal columnals are round, alternatingly expanded and well crenulated.

Measurements (in mm).—

	Holotype
Width of dorsal cup	12.3
Height of dorsal cup	7.0
Diameter of expanded proximal columnal	2.0
Width of r. ant. B*	5.7
Length of r. ant. B*	6.0
Width of r. ant. R*	6.4
Length of r. ant. R*	4.2
Length of suture between BB	3.0
Length of suture between RR	2.5

* Along surface curvature.

Remarks.—The general appearance of this species is more comparable to *T. compactus* than to other described species. *T. progressus* is readily distinguished by the more advanced arrangement of the anal plates and the slightly elongated axillary PBrBr.

Occurrence and horizon.—Nelagony formation, about 35 feet below the Wildhorse limestone member, Virgil series, Pennsylvanian; NW ¼ section 21, T. 22 N., R. 10 E., Osage County, Okla., about 15 miles west of Skiatook.

Types.—Holotype collected by Richard Alexander. To be deposited in the U. S. National Museum.

Texacrinus associatus, n. sp.
Figs. 1–4

Dorsal cup has the form of a low basally impressed globe. All cup plates are mildly tumid principally due to the impressed sutures. Five IBB form a pentagonal disk at the bottom of the

shallow basal concavity, and are visible beyond the columnar scar. Five BB form a broad basal plane and curve upward to participate in the lateral cup walls. Five RR are wide pentagonal plates. The outer surfaces of RR extend into the interarticulating areas but not in a pronounced manner. Distinctive characters of the articulating facets are the unusually large outer areas where strong outer marginal ridges are found. Ligamental pit furrows are pronounced and transverse ridges are sharp though not prominent. Muscle areas are rather small and slope slightly outwardly.

Three anal plates are present in the post. IR. RA is the larger and has firm contact with l. post. R, anal X, RX, r. post. R, r. post. B and post. B. Anal X is rather small and extends above the distal extremities of the cup. RX is small and forms a common upper plane with anal X.

Proximal columnals are not present but the cicatrix is well defined. Strong crenulations mark the perimeter of the scar and the lumen appears to be rather large and pentalobate.

Measurements (in mm).—

	Holotype
Width of dorsal cup	11.7
Height of dorsal cup	5.1
Diameter of columnar scar	2.0
Width of r. ant. B*	6.0
Length of r. ant. B*	6.0
Width of r. ant. R*	7.0
Length of r. ant. R*	4.2
Length of suture between BB	2.2
Length of suture between RR	1.7

* Along surface curvature.

Remarks.—The broad basal plane and low dorsal cup serves to distinguish *T. associatus* from other known species of the genus.

Occurrence and horizon.—Oologah limestone (perhaps equivalent to the Altamont limestone of Kansas), Des Moines series, Pennsylvanian; Chandler Materials Company quarry, east of Tulsa, Okla.

Types.—Holotype collected by the author. To be deposited in the U. S. National Museum.

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——— and PLUMMER, F. B. Univ. Texas Publ. 3945: 143–146, pl. 15, fig. 4, pl. 21, fig. 5. 1940.

ENTOMOLOGY.—*The Ethiopian genera of Sarginae, with descriptions of new species.* MAURICE T. JAMES, State College of Washington.

The subfamily Sarginae forms a more uniform and homogenous group of flies, over a wide part of the earth's surface, than do the other subfamilies of Stratiomyidae. Collections from the different continents and from major island areas appear surprisingly similar to one another. The wide distribution of such genera as *Microchrysa*, *Ptecticus*, and *Sargus* s.s. is noteworthy. Yet speciation is occurring actively in some areas, and major geographic areas may have their endemic genera. The Ethiopian Region is no exception in this respect.

Eight valid genera have previously been recorded from the Ethiopian Region. These consist of the widely distributed *Sargus*, *Ptecticus*, *Microchrysa*, *Cephalochrysa*, and *Chloromyia* and the three endemic genera *Sagaricera*, *Paraptecticus*, and *Otochrysa*. The last mentioned genus is unknown to me except from its description (Lindner, 1938b, p. 15). Consequently I am unable to place it in the key or to remark further concerning its status. *Parasargus*, proposed by Lindner (1935, p. 300) for a new species, *P. africanus*, was later reduced by that author (Lindner, 1938b, pp. 13, 14) to the status of a subgenus of *Microchrysa*, and the generotype synonymized with *M. stigmatica* Enderlein. The genus *Chrysochroma* (generotype *Musca bipunctata* Scopoli) is at most a subgenus of *Sargus*, in which the ocelli are equidistant from one another. Many species previously referred to *Chrysochroma* belong in *Cephalochrysa* or other genera of Sarginae. *Chyrsochromoides* Brunetti (1926, p. 135), proposed for *C. micropunctata* Brunetti 1926, is unknown to me; Brunetti says it differs from *Chrysochroma* only in the simple third vein. It may be a valid genus or, on the other hand, a synonym of *Cephalochrysa* or *Sargus*.

KEY TO THE GENERA OF ETHIOPIAN SARGINAE

1. Eyes densely and distinctly pilose; lower squama well-developed, similar in form to the upper squama ..... *Chloromyia*
   Eyes bare; lower squama reduced, either transverse or with a relatively slender, straplike projection 2

2. Second antennal segment, from the inner aspect, with a fingerlike process that protrudes deeply into the third.....3
Second antennal segment at most moderately convex apically.....4
3. Lower squama with a straplike process; first antennal segment longer than the second; frons of male reduced at its narrowest to less than the diameter of an ocellus; vein R_{2+3} arising beyond r-m by at least length of r-m.....*Sagaricera*
Lower squama transverse apically, without a straplike process; first antennal segment no longer than the second; frons of male, in Ethiopian species, at its narrowest broader than the ocellar triangle; vein R_{2+3} arising at or before r-m.....*Ptecticus*
4.[1] Vein R_{2+3} arising between r-m and the apex of discal cell; lower squama transverse apically, without a straplike process, face distinctly protruding below, the oral margin prominent; nonmetallic species.....*Paraptecticus*
Vein R_{2+3} arising at or beyond the apex of the discal cell; lower squama with a straplike process; face not protruding below, the oral margin poorly developed; Ethiopian species at least partly metallic.....5
5. Abdomen short and broad, usually wider than the thorax and, measured to the apex of segment four, no longer than wide; eyes contiguous in the male and divided into definite zones of different sized facets; ocellar triangle equilateral.....6
Abdomen barely if any wider than the thorax, much longer than wide; eyes usually broadly separated (contiguous in male *Pedicellina*) and not divided into definite zones of different sized facets; ocellar triangle equilateral (*Chrysochroma*, some *Pedicellina*) or much longer than wide (typical *Sargus*).....*Sargus*
6. Discal cell small; posterior veins weak, evanescent toward wing margin; maximum width of anal cell equal to combined widths of two basal cells.....*Microchrysa*
Discal cell normal; posterior veins evident to wing margin; maximum width of anal cell but little greater than that of second basal cell, distinctly less than combined widths of two basal cells.....*Cephalochrysa*

Genus **Chloromyia** Duncan, 1837

Chloromyia tuberculata, n.sp.

To my knowledge, this is the only black species of *Chloromyia* that has been described. It differs from the European species, *C. formosa* (Scopoli) (the generotype) and *C. melampogon* (Zeller), in that the frons of the female is tuberculate, and from the described European, as well as the African species (*C. bella* (Loew), *C. caeligera* Lindner), in the color pattern of the legs.

Female.—Head black; frontal callus and face somewhat castaneous; upper corners of frontal callus prolonged into minute ivory triangles; a castaneous glabrous triangular area above frontal callus at midfrontal line. Frons moderately convex, with a prominent, though not clearly defined, tubercle a little less than halfway from anterior ocellus to frontal callus; this tubercle bisected, though not deeply, by the midfrontal suture. Frons coarsely punctate, the frontal callus, face, and postocular orbits similarly though less coarsely punctate, the punctures giving rise to silvery hairs. Postocular orbits well developed above, almost evanescent below. Eyes with moderately dense, moderately long black pile. Antenna structurally much as in *formosa*; the first segment shorter, however (subequal to the second), and the arista more slender basally and with one or two hairs at its extreme base; first and second segments shiny, black; flagellum reddish; arista blackish. Proboscis yellow.

Thorax black; humerus and a line from humerus to wing base ivory; mesonotum coarsely punctured, pleura less conspicuously so; pile silvery, short and strongly appressed on the dorsum, somewhat longer on the pleura. Coxae, trochanters, femora, and fore and mid tibia, except broadly at the knees, black; fore and mid tarsi brownish, paler at the bases of the basitarsi; hind tibia and tarsus yellowish, the basitarsus almost white, the apical half of the tibia and the apical two tarsomeres more brownish. Venation essentially as in *formosa;* membrane subhyaline, distinctly infuscated across the istgma and discal cell, paler at the base; veins brown, yellowish toward base. Squamae structually as in *formosa*, pale yellow with whitish fringe. Halteres yellow, brownish on the stalk.

Abdomen black; densely though more finely punctured than on the mesonotum. Discs of second, third, and fourth terga, except basally, apically, and broadly laterally, with black (reddish in certain lights) appressed pile; terga otherwise and sterna with appressed silvery pile.

Length, 7.5 mm.

Male.—Eyes subcontiguous; postocular orbits wanting. Head with mostly black pile which,

[1] *Otochrysa* Lindner (1938b, p. 15) should trace to this couplet, according to the description, but vein R_{2+3} arises beyond the apex of the discal cell, the only known species has a yellow body, and the postocular orbit of the female is strongly developed, keeled, and hairy.

together with that of the eyes, is much longer than in the female. Pile of mesonotum and scutellum long and largely erect. Abdomen shining violaceous dorsally, black ventrally, clothed entirely with silvery appressed pile. Otherwise, except sexually, as in the female.

Types.—Holotype, female, Mubende, Uganda, April 14, 1931 (H. Hargreaves); allotype, male, Kasenyi, Uganda, April 14, 1931 (Hargreaves); to be deposited in the British Museum (Natural History). Paratype, female, Kilimanjaro (W. L. Abbott), U. S. N. M. no. 23656.

Variation.—The female paratype has the antennae wholly yellow and has some blackish pile on the front; otherwise it agrees with the holotype.

Genus **Sagaricera** Grünberg, 1915

This genus was erected on the basis of the striking development of the antennal flagellum and was placed close to *Ptecticus* and *Chrysochroma*. The only species that has been referred to it is the generotype, *S. aenescens* Grünberg, described from a male (Grünberg, 1915, p. 63) and redescribed later from a female by Lindner (1938a, p. 68). Striking as this character is, I do not feel that it is a valid basis for differentiation, since another species, *Sargus analis* Macquart, referred to *Ptecticus* by Brunetti, is in other respects morphologically much closer to *Sagaricera* than to *Ptecticus*. I am therefore redefining *Sagaricera* on the basis of characters included in my generic key and am proposing the following new combination and synonymy.

Sagaricera analis (Macquart), n. comb.

Sargus analis Macquart, Dipt. Exot. **1**: 204. 1838.
Plecticus (*sic!*) *analis* (Macquart), Brunetti, Rev. Zool. Afr. **14**: 124. 1926.
Ptecticus cinctifrons Grünberg, Mitt. Zool. Mus. Berlin **8**: 61. 1915; Lindner, Mitt. Deut. Ent. Ges. **8**: 68. 1938; Lindner, Bull. Mus. Roy. d'Hist. Nat. Belg. **14**: 6. 1938. (New synonymy.)
Ptecticus opalescens Lindner, Deut. Ent. Zeit. 1934: 302. 1935. (New synonymy.)

In appearance this species resembles *S. aenescens* much more closely than it does any known species of *Ptecticus*. The male genitalia are of a type much different from that of any *Ptecticus* known to me.

Macquart's type came from an unknown locality, but M. E. Séguy kindly furnished me with a specimen compared with the type, and it is on this that the present synonymy is based.

Genus **Ptecticus** Loew, 1855

As restricted here, the Ethiopian species of *Ptecticus* seem to form a fairly homogeneous group, although at least two very distinct types of male genitalia occur. The body is elongated and basically yellowish; the eyes of the male are distinctly separated; the frons in both sexes is black with metallic blue reflections, but the vertex behind the ocellar triangle becomes abruptly yellow. In the species which I have examined (*P. elongatus* (Fabricius) and the four new species described in this paper) vein R_{2+3} arises at or slightly before r–m and runs close to R_1 to its apex, the two longitudinal veins either paralleling or gradually approaching each other. Except in *P. aculeatus*, n.sp., the male genitalia are of a quite uniform type, though differing significantly in detail: the ninth tergite is of moderate size and distinctly emarginate apically; the surstylus, which possesses characters which seem to be specifically diagnostic in this group, is separated from the tergite by a suture, ends in a blunt or sharp apex that extends far beyond the apex of the tergite, and is subtended dorsally by a translucent flange; the ninth sternite is arcuate apically; the dististyli tend to turn upward and inward toward the apex of the aedeagus; the aedeagus is thick, its skeletal apparatus black, heavily sclerotized, and either entire or bilobed apically.

The following key will separate the known Ethiopian species of *Ptecticus*. Of these, *P. rufipes*, *P. mesoxanthus*, and *P. polyxanthus* have had to be placed from the descriptions. The characters based on tarsal coloration may seem trivial, but in the species I have studied they are correlated with very definite genitalic differences.

1. Hind tarsus yellow, at most the basitarsus brownish.....2
   Hind tarsus wholly black or black and white.3
2. Hind legs wholly yellow....*polyxanthus* Speiser
   Hind legs with tibiae blackened basally.
   mesoxanthus Grünberg
   rufipes Lindner
3. Hind tarsus wholly black.....4
   Hind tarsus white at least on a large part of the second and third tarsomeres.....5
4. Hind legs practically wholly black; abdominal terga two to six inclusively conspicuously marked with black; surstylus acute apically, its flange of equal width throughout much of its length.....*somereni*, n.sp.
   Hind legs with coxae, trochanters, femora, and parts of tibiae yellow; abdomen without black

markings; surstylus blunt apically, its flange not of uniform width..... *rhodesiae*, n.sp.

5. Surstylus not separated from ninth tergite by a suture; aedeagus very slender, terminating in a long process which suggests a hymenopterous sting..... *aculeatus*, n.sp.

Surstylus separated from ninth tergite by a suture; aedeagus thick, blunt, either entire or bilobed.....6

6. Hind tarsus white beyond basitarsus; male with tergum distinctly incised apically; aedeagus bilobed; surstylus acute apically. *elongatus* (Fabricius)

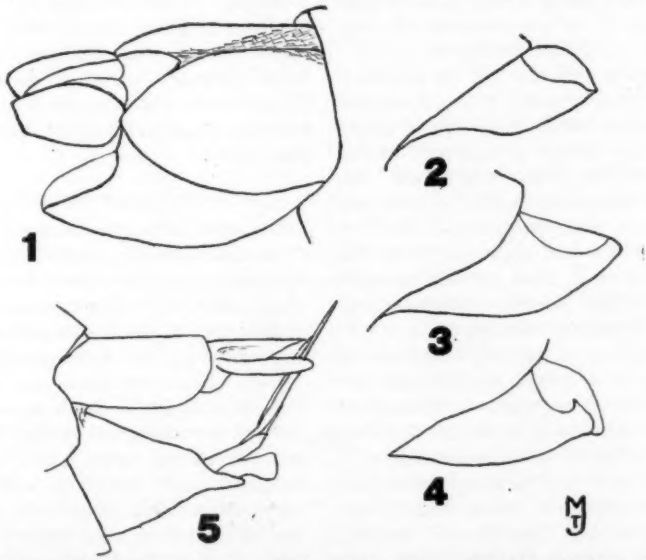
Hind tarsus with second tarsomere except its base and third tarsomere white; male ninth tergum transverse, not incised; aedeagus entire, not bilobed; surstylus blunt apically. *bequaerti*, n.sp.

Ptecticus somereni, n. sp.

Readily distinguished from previously described Ethiopian *Ptecticus* by the practically wholly black hind legs and the extensive black markings, over a yellow background, on the mesonotum and the abdominal terga. Related to *P. elongatus*, but the genitalia are significantly different.

Male.—Occiput black except median plate which, together with vertex posterior to ocellar triangle, is pale yellow; ocellar triangle and frons to callus black with bluish reflections; frontal callus and face pale yellow, almost white. Occipital orbits with conspicuous yellow tomentum and pile, occiput otherwise with inconspicuous, short, black hair; frons and vertex black-haired; face with a little pile, black and yellow intermixed, below antennal bases. First and second antennal segments yellow, with black hair; flagellum orange-yellow; arista black. Proboscis pale yellow.

Thorax mainly yellow. Mesonotum with a median black stripe from the anterior margin to suture and a lateral one on each side, broadly separated from the humerus anteriorly and from the scutellum posteriorly, and narrowly interrupted at the suture; sternum largely blackish. Metanotum black. Pile of mesonotum largely and of scutellum wholly short, black, inconspicuous, somewhat longer and yellow laterally and anteriorly on the mesonotum; pleural pile yellow. Front leg yellow except that the coxae and the last four tarsomeres are extensively blackish; yellow pilose except dorsally on apical four tarsomeres. Middle leg with coxa, trochanter, femur except apex, and last four tarsomeres blackish and black-haired, otherwise yellow and yellow-haired. Hind leg practically entirely black and black-haired; tarsus and extreme apex of tibia ventrally yellowish brown,



FIGS. 1-5.—1, *Ptecticus somereni*, n. sp.: Male hypopygium, dorsolateral view, from holotype. 2, *Ptecticus elongatus* (Fabricius): Surstylus of male genitalia. 3, *Ptecticus rhodesiae*, n. sp.: Surstylus of male genitalia. 4, *Ptecticus bequaerti*, n. sp.: Surstylus of male genitalia. 5, *Ptecticus aculeatus*, n. sp.: Male genitalia, lateral view, from holotype.

with some brown hairs. Wing lightly infuscated, noticeably more strongly so beyond discal cell. Variation essentially as in *elongatus*. Halteres yellow, the knobs slightly infuscated.

Abdomen mainly yellow; first tergum with two small median dark spots; second with a blackish cross band, subinterrupted medially, across the middle of the segment; third to sixth inclusively mainly black, with broad posterior yellow margins; third to fifth sterna broadly discolored medially. Yellow pile on sterna, laterally on terga, and on genital surstyli; that of terga and genitalia otherwise black. Genitalia (Fig. 1) similar to those of *elongatus;* ninth tergum more deeply incised medially; cerci more robust, oval; surstylus acute apically, as in *elongatus* but its translucent dorsal flange almost parallel-sided; dististylus more elongated, almost parallel-sided to apex, which is rounded.

Length, 15 mm.

Type.—Holotype male, Bwamba, Uganda, June 1948 (Van Someren); to be deposited in the British Museum (Natural History).

Ptecticus rhodesiae, n. sp.

In addition to the wholly black hind tarsus and the extensively black hind tibia, the yellow pile of the vertex and of the abdominal terga will serve to differentiate this species from at least most material of *P. elongatus* and the male genitalia show significant differences.

Male.—Head structurally as in *elongatus;* occiput black except median plate which, together with vertex behind the ocellar triangle, is yellow; ocellar triangle and frons to frontal callus black; frontal callus white, the face scarcely lighter in coloration. Pile of frons and face concolorous with background; that of occiput pale yellow and appressed along the orbits, otherwise black. First antennal segment whitish; second and flagellum yellow; arista mostly black. Proboscis whitish.

Thorax yellow to greenish yellow; mesonotum with evidences of a divided median and two lateral stripes. Pile of mesonotum and scutellum inconspicuous, appressed; black on the disc, yellowish on the broad sides and anterior margins of the mesonotum. Pleura and metanotum with pale, semierect pile. Wings slightly and uniformly infuscated; veins brown; venation essentially as in *elongatus*. Halteres yellow. Legs mainly yellow and yellow haired; on anterior and middle tarsi, last three tarsomeres black and last four black-haired; hind legs with tibia except apex and tarsus wholly black and black-haired.

Abdomen yellow, more reddish toward apex, immaculate or with the terga spotted; pile bright yellow. Genitalia similar to those of *elongatus;* the aedeagus, however, is not bilobed, and the surstyli (Fig. 3), when viewed posteriorly, are blunt apically, and when viewed laterally, are more slender and more strongly bowed dorsally than in *elongataus;* as in *elongatus* the surstyli are subtended dorsally by a translucent flange, but this is straight or slightly concave dorsally in *rhodesiae* and strongly convex in *elongatus*. Ninth tergum distinctly incised apically, reddish yellow; aedeagus blackish; genitalia otherwise pale yellow.

Length, 15–16 mm.

Female.—Essentially as in the male, except for the broader frons and the sexual characters. The frons is brownish and the hair apparently pale, but this is probably due to the slightly teneral condition of the allotype. Some dark coloration on the thorax is also probably due to the condition of the specimen.

Types.—Holotype male, Vumba Mountains, Southern Rhodesia, Jan. 18, 1937 (Major Drysdale). Allotype female, Chirinda Forest, Southern Rhodesia, October 1926 (G. Arnold). Paratypes, 2 males, Vumba Mountains, Umtali Dist., Southern Rhodesia, March 1938 (A. Cuthbertson); 1 male, 1 female, Salisbury, Southern Rhodesia, February 1929 and January 30, 1935 (Cuthbertson). Holotype, allotype, and one paratype to be deposited in British Museum (Natural History).

Ptecticus aculeatus, n. sp.

A species with the general appearance of *P. elongatus* though somewhat more slender, the most outstanding color differences being the wholly black hind tibia and the much broader whitish apex of the hind basitarsus. The genitalia, however, are strikingly different.

Male.—Head structurally and in color essentially as in *elongatus*, the frons at its narrowest perhaps very slightly wider than in that species; pile of front and vertex black. Thorax yellow, mesonotum and scutellum with short black hairs, pleura yellow-pilose. Legs mainly yellow; fore tarsus somewhat darkened beyond basitarsus, middle tarsus also somewhat darkened on the last two tarsomeres; hind tibia black, hind basitarsus black and black-haired to apical fourth, thence whitish and whitish-haired.

Abdomen yellow, a brownish discal spot on the fifth tergum; black-haired on terga except laterally, yellow-haired on sterna and sides of terga. Genitalia (Fig. 5) slender; ninth tergum, from dorsal view, longer than wide and transverse apically; surstyli apparently completely submerged into the ninth tergite, not evident even as a protruding lobe; basistyle deep, dish-like, the dististyli inserted at its apex, contiguous, short, broadening and blunt apically. Proctiger slender; cerci very elongated and slender, digitate; proctiger and cerci with black pile, remaining pile of terminalia yellowish. Aedeagus heavily sclerotized, black, shining, greatly elongated and drawn out to a sharp point, somewhat suggesting the sting of a hymenopteron; the terminal part enclosed in a yellowish lightly sclerotized sheath. Length, 10 mm.

Type.—Holotype male, Olokemeji, Nigeria, May 7, 1936 (Van Zwaluwenburg and McGough); U. S. N. M. no. 61459.

Ptecticus bequaerti, n. sp.

Ptecticus elongatus Fabricius, subspec., Lindner, British Mus. (Nat. Hist.) Ruwenzori Exped. **2**(1–2): 2. 1939. Probably refers to the present species.

Quite similar in appearance to *P. elongatus* (Fabricius) but differing in the color of the legs and in the male genitalia. The hind tibia is yellow or yellowish on most of its apical half; the hind tarsus is black and mostly black-haired on the first, fourth, fifth, and the base of the second tarsomeres (yellow-haired ventrally on the basitarsus); the second tarsomere except its base and the third tarsomere are white and white-haired. Coloration of legs and body otherwise as in *elongatus;* there is a roundish black spot medially on tergum 5. The ninth tergum of the male is concave but hardly incised apically; the surstylus (Fig. 4) is blunt apically, its flange being truncated apically; the aedeagus is not bilobed.

Types.—Holotype male, Elizabethville, Belgian Congo (M. Bequaert). Allotype, female, same data. Paratypes: 1 male, Embu, British East Africa, "10–3–14, no. 123, II, G. SJ. OB"; 1 male, Vumba Mountains, Southern Rhodesia, March 1935 (A. Cuthbertson); 1 female, Mazoe, Southern Rhodesia, Jan. 28, 1929 (W. J. Hall. Holotype and allotype, James Collection; paratypes in the United States National Museum and the American Museum of Natural History.

A female, Elizabethville, which probably belongs to this species but which is not given type designation, has the hind tarsus wholly black.

Genus **Paraptecticus** Grünberg, 1915

The generotype, *P. viduatus* Grünberg, is the only species I know that can be referred to this genus. It is in appearance quite *Ptecticus*-like, but is structurally quite different. Another species, *P. luctuosus* Lindner, was described in this genus, but it does not belong there. I believe I have correctly identified as this species, from Lindner's description and from notes on the type furnished me by Dr. A. Collart, a female from Bwamba (H:) Uganda, June 1948 (Van Someren), Commonwealth Institute of Entomology. *P. luctuosus* will run to *Sargus* in my generic key, except that the abdomen apically becomes somewhat more noticeably broader than the thorax. This species probably should be referred to a new genus, but I refrain from proposing such until males are available.

Pedicellina, n. subg.

Pedicella Bigot, Brauer, Denkschr. Kais. Akad. Wiss. Wien **44**: 88. 1882, *nec* Bigot, Ann. Soc. Ent. France (3) **4**: 63, 83. 1856.

Macrosargus Bigot of Authors; *nec* Bigot, Ann. Soc. Ent. France (5) **9**: 187, 225. 1879.

Eyes of male contiguous or nearly so to frontal callus, which in turn forms the frontal triangle; lower ocular orbits, adjacent to the poorly developed or evanescent oral margin, well developed and prominent. Abdomen of male strongly constricted on second and sometimes also on third segment, broader both basad and apicad of that area; of female somewhat narrowed, sometimes definitely so, on the second segment.

Subgenerotype, *Sargus notatus* Wiedemann.

Since there are intergrading forms between this and typical *Sargus*, it seems better to consider it a subgenus rather than a genus; though among American forms, where it is best represented, it represents a well defined segregate.

The unavailability of the name *Pedicella* for this group of species has been discussed previously by Aldrich (1933, p. 165) and James (1935, p. 268). Brauer's designation of *Macrosargus tenuiventris* Bigot as the generotype of *Macrosargus*, and consequently of *Pedicella*, which *Macrosargus* was proposed to replace, was invalid, since this species was not included

originally in either of the above genera and consequently the first valid generotype designation was that of *Sargus tenebrifer* Walker by Aldrich. This makes *Pedicella* either a synonym, a subgenus, or a genus closely related to *Ptecticus*, and leaves the present group without a previously available name.

Sargus (Pedicellina) tenuis (Lindner), n. comb. *Chrysochroma tenue* Lindner, Bull. Mus. Roy. Hist. Nat. Belgique **14**(54): 18. 1938.

The following seems to be the male of Lindner's species, which was described from a female.

Male.—Eyes subcontiguous, separated by a linear black impression which is one-fourth the diameter of an ocellus; ocellar triangle almost equilateral. Occiput and vertical triangle black, the postocular orbits pale-yellow-pilose and somewhat white-dusted, the vertical triangle and frontal line black-pilose; frontal triangle ivory, becoming more yellowish on the face and brown toward the oral margin, with black and yellow pile intermixed; ocular orbits along oral margin well developed, as broad as the width of the first antennal segment, polished black. Antenna black and black-pilose, the flagellum tending to brownish. Proboscis yellow.

Mesonotum and scutellum metallic blue-green with mostly greenish reflections, mostly black-pilose, with some erect yellowish pile laterally. Pleura mostly black, subshining with some bluish reflections; humeri white; notopleural line yellow; metapleura white; pile of pleura white to yellow. Wings lightly infumated, paler at base; veins black, brownish toward base. Halteres yellow; knobs somewhat darker. Legs yellow with the following areas black or blackish: all coxae except apices, apical third of front and half of middle femora; hind femur except extreme base; apical half of hind tibia; and hind tarsus from apex of basitarsus.

Abdomen with second segment very narrow, almost cylindrical, more constricted than the first; beyond the second segment gradually broadening to the fifth. Second segment mainly yellow, black on the sides of the terga and subapically; extreme apex of first tergum and base of third, most of first sternum and sometimes of third, yellow; abdomen otherwise black with bluish and bronze reflections, variable as to the light incidence. Genitalia small, black.

Length, 9 mm.

UGANDA: Two males, Bwamba Valley, July 1946 (Van Someren); male, Bwamba, July to August 1946 (Van Someren).

REFERENCES

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———. *Stratiomyiiden aus dem Kongo-Gebiet (Diptera).* Bul. Mus. Roy. Hist. Nat. Belgique **14**(54): 1–35. 1938b.

ENTOMOLOGY.—*New names in the Homoptera.* Z. P. METCALF, North Carolina State College. (Communicated by Herbert Friedmann.)

The new names proposed herein seem to be necessary for the reasons stated. It was planned originally to publish these names in connection with the *Catalogue of the Hemiptera*, but the publication of future volumes of this catalogue may be considerably delayed. All genera are listed under the appropriate family, subfamily, and tribe, according to the classification which I now use in the card catalogue of the Homoptera of the World. This should enable any student to locate these genera. Bibliographic references are given complete enough, I believe, to enable anyone to locate original sources. The references to names in the Homoptera have all been verified; for genera not in the Homoptera I have depended upon Neave's *Nomenclator zoologicus* **1–5**. 1939–1945.

Family NOGODINIDAE

Goniopsara, n. n.

Pro *Goniopsis* Melichar, Verh. zool.-bot. Ges. Wien **49**: 292 (4). 1899.

Nec *Goniopsis* de Haan, Fauna Japon. (Crust.): 33. 1835.

Orthotype: *Goniopsis mystica* Melichar.

Siopaphora, n. n.
Pro *Siopa* Jacobi, *in* Voeltzkow, Reise in Ostafrika **3**: 535. 1917.
Nec *Siopa* Hendel, Wien. Ent. Zeit. **28**: 253. 1909.
Orthotype: *Siopa fumivenosa* Jacobi.

Family FLATIDAE

Subfamily FLATINAE

Tribe Flatini

Flatidissa, n. n.
Pro *Flatida* Haglund, Öfv. Svenska Vet.-Akad. Förh. **56**: 70. 1899.
Nec *Flatida* White, Ann. Mag. Nat. Hist. **18**: 26. 1846.
Orthotype: *Flatida furcigera* Haglund.

Tribe Ceryniini

Adelidoria, n. n.
Pro *Hansenia* Kirkaldy, Journ. Bombay Nat. Hist. Soc. **14**: 53. 1902.
Nec *Hansenia* Melichar, Ann. Nat. Hofmus. Wien **16**: 228. 1901.
Orothotype: *Poekilloptera glauca* Kirby.

Doriana, n. n.
Pro *Doria* Melichar, Ann. Nat. Hofmus. Wien **16**: 231. 1901.
Nec *Doria* Meigen, Syst. Beschr. Zweifl. Insekt. **7**: 263. 1838.
Orthotype: *Poekilloptera conspersa* Walker.

Tribe Flatissini

Phylliana, n. n.
Pro *Mesophylla* Melichar, Ann. Nat. Hofmus. Wien **17**: 53. 1902.
Nec *Mesophylla* Thomas, Ann. Mag. Nat. Hist. (7) **8**: 143. 1901.
Orthotype: *Mesophylla inclinata* Melichar.

Tribe Selizini

Melichitona, n. n.
Pro *Chitona* Melichar, Genera insectorum **182**: 114. 1923.
Nec *Chitona* Schmidt, Linnaea Ent. **1**: 134. 1846.
Orthotype: *Phalaenomorpha collaris* Jacobi.

Family ISSIDAE

Subfamily CALISCELINAE

Tribe Caliscelini

Itatiayana, n. n.
Pro *Itatiaya* Schmidt, Stettin. Ent. Zeit. **93**: 43. 1932.
Nec *Itatiaya* Mello-Leitão, Brotéria **13**: 139. 1915.
Orthotype: *Itatiaya banzhafi* Schmidt.

Ugandana, n. n.
Pro *Ugandella* Schmidt, Stett. Ent. Zeit. **93**: 43. 1932.
Nec *Ugandella* Sjoestedt, Ark. Zool. **15** (6): 18. 1923.
Orthotype: *Afronaso bayoni* Schmidt.

Tribe Ommatidiotini

Bergrothora, n. n.
Pro *Schmidtella* Bergroth, Wien. Ent. Zeit. **29**: 241. 1910.
Nec *Schmidtella* Ulrich, Amer. Geol. **10**: 269. 1892.
Orthotype: *Bruchomorpha globosa* Melichar.

Subfamily HEMISPHAERIINAE

Hemiphile, n. n.
Pro *Herophile* Stål, Hemiptera Africana **4**: 203. 1866.
Nec *Herophile* Steenstrup, Overs. Danske Selsk. 1860: 121. 1860.
Orthotype: *Hemisphaerius latipes* Stål.

Darumara, n. n.
Pro *Daruma* Matsumura, Trans. Sapporo Nat. Hist. Soc. **6**: 103. 1916.
Nec *Daruma* Jordan and Starks, Proc. U. S. Nat. Mus. **27**: 232, 241. 1904.
Orthotype: *Daruma nitobei* Matsumura.

Subfamily ISSINAE

Tribe Hysteropterini

Perissana, n. n.
Pro *Perissus* Melichar, Abh. zool.-bot. Ges. Wien **3** (4): 113. 1906.
Nec *Perissus* Chevrolat, Mém. Soc. Sci. Liége **18**: 262. 1863.
Orthotype: *Issus jakowleffi* Puton.

Tribe Issini

Distiana, n. n.
Pro *Moniana* Distant, Ann. Mag. Nat. Hist. (8) **4**: 76. 1909.
Nec *Moniana* Girard, Proc. Acad. Nat. Sci. Philadelphia **8**: 199. 1856.
Orthotype: *Moniana andrewsi* Kirby.

Issella, n. n.
Pro *Issina* Melichar, Abh. zool.-bot. Ges. Wien **3** (4): 209. 1906.
Nec *Issina* Jousseaume, Le Naturaliste (2) **12**: 22. 1898.
Orthotype: *Issina suturalis* Melichar.

Family RICANIIDAE

Subfamily RICANIINAE

Tribe Ricaniini

Meliprivesa, n. n.
Pro *Neoprivesa* Melichar, Genera insectorum **182**: 145. 1923.
Nec *Neoprivesa* Distant, Trans. Linn. Soc. London (2) **17**: 297. 1917.
Orthotype: *Neoprivesa disturbata* Melichar.

Family LOPHOPIDAE

Subfamily ACARNINAE

Tribe Acarnini

Meloenopia, n. n.
Pro *Oenopia* Melichar, Časopis České Spol. Ent. **10**: 158 (8). 1913.

Nec *Oenopia* Mulsant, Ann. Soc. Agr. Lyon (2) **2**: 420. 1850.
Orthotype: *Oenopia princeps* Melichar.

Family EURYBRACHIDAE

Subfamily EURYBRACHINAE

Tribe Loxocephalini

Nesiana, n. n.
Pro *Nesis* Stål, Öfv. Svenska Vet.-Akad. Förh. **18**: 210. 1861.
Nec *Nesis* Mulsant, Ann. Soc. Agr. Lyon (2) **2**: 67. 1850.
Orthotype: *Eurybrachys tricolor* Walker.

Subfamily PLATYBRACHINAE

Tribe Platybrachini

Maeniana, n. n.
Pro *Maenia* Jacobi, Ark. Zool. **19A** (28): 6. 1928.
Nec *Maenia* Dalton, Geol. Rec. **1877**: 392. 1880.
Orthotype: *Maenia hirsuta* Jacobi.

Family MACHAEROTIDAE

Subfamily HINDOLINAE

Tribe Hindolini

Soamachaerota, n. n.
Pro *Soa* Jacobi, Ark. Zool. **19A** (28): 46. 1928.
Nec *Soa* Enderlein, Zool. Jahrb. (Abt. Syst.) **20**: 109. 1904.
Orthotype: *Polychaetopyhes appendiculata* Hacker.

Family TOMASPIDAE

Subfamily TOMASPINAE

Tribe Cosmoscartini

Horvathiana, n. n.
Pro *Horvathiella* Lallemand, Ann. Mus. Nat. Hungarici **32**: 60. 1939.
Nec *Horvathiella* Poppius, Acta Soc. Sci. Fennica **41**: 115. 1912.
Orthotype: *Horvathiella rubrovittata* Lallemand.

Family CERCOPIDAE

Subfamily CERCOPINAE

Tribe Ptyelini

Pentacanthoides, n. n.
Pro *Pentacantha* Lallemand, Bull. Mus. Hist. Nat. Paris **28**: 64. 1922.
Nec *Pentacantha* Stål, Öfv. Svenska Vet.-Akad. Förh. **28**: 400. 1871.
Orthotype: *Pentacantha brunnea* Lallemand.

Tribe Lepyroniini

Balsana, n. n.
Pro *Balsa* Stål, Hemiptera Africana **4**: 66. 1866.
Nec *Balsa* Walker, Can. Nat. **5**: 250. 1860.
Orthotype: *Lepyronia obscurata* Amyot and Serville.

Paralepyroniella, n. n.
Pro *Eulepyroniella* Lallemand, Bull. Inst. Franç. Afrique Noire **12**: 630. 1950.
Nec *Eulepyroniella* Schmidt, Ent. Mitt. **14**: 112. 1925.
Orthotype: *Lepyronia aethiops* Distant.

Family TETTIGELLIDAE

Subfamily TETTIGELLINAE

Tribe Tettigellini

Ceratogoniella, n. n.
Pro *Ceratogonia* Melichar, Ann. Mus. Nat. Hungarici **23**: 350. 1926.
Nec *Ceratogonia* Kolbe, Ent. Nachr. **25**: 45. 1899.
Orthotype: *Tettigonia recta* Fowler.

Poecilocarda, n. n.
Pro *Poeciloscarta* Melichar, Ann. Mus. Nat. Hungarici **23**: 342. 1926.
Nec *Poeciloscarta* Stål, Handl. Svenska Vet.-Akad. **8** (1): 73. 1869.
Orthotype: *Tettigonia binaria* Signoret.

Tribe Ciccini

Cicciana, n. n.
Pro *Ciccus* Stål, Handl. Svenska Vet.-Akad. **8** (1): 60. 1869.
Nec *Ciccus* Latreille, Cuvier's Règne animal (nouvelle ed.) **5**: 221. 1829.
Orthotype: *Ciccus latreillei* Distant.

The genus *Ciccus* was described by Latreille without any included species; however, in 1831, in the Animal Kingdom by Cuvier, translated by McMurtrie, **4:** 46, two species, *Cicada adspersa* Fabricius and *marmorata* Fabricius, were included, and in 1903 Kirkaldy, Entomologist, **36:** 232, selected *Ciccus adspersus* Fabricius as the genotype. Later, Distant noted that the *Tettigonia adspersa* Burmeister [nec Fabricius], Handbuch der Entomologie **2** (1): 119, was not the same as *Cicada adspersa* Fabricius. He established a new name, *Ciccus latreillei*, for this species, which he named as the type of *Ciccus*. In this he was followed by later authors (Melichar, Ann. Mus. Nat. Hungarici **21:** 206, 1924; Schmidt, Stett. Ent. Zeit. **89:** 37, 1928; and Evans, Trans. Ent. Soc. London **98:** 168, 1947). In the meantime, Stål, Handl. Svenska Vet.-Akad. **8** (1): 65, 1869, established the genus *Coelopola* and assigned *Cicada adspersa* Fabricius to it. *Ciccus* Latreille with genotype *Cicada adspersa* Fabricius will stand, and the *Ciccus* Stål must be renamed with *Ciccus latreillei* Distant as the genotype. *Ciccus* Latreille equals *Coelopola* Stål.

Family LEDRIDAE

Subfamily LEDRINAE

Tribe Xerophloeini

Epiclinata, n. n.
Pro *Epiclines* Amyot and Serville, Histoire naturelle des insectes: Hémiptères: 577. 1843.
Nec *Epiclines* Chevrolat, Mag. Zool. **8**: 40. 1838.
Orthotype: *Membracis planata* Fabricius.

Family EUSCELIDAE

Subfamily EUSCELINAE

Tribe Euscelini

Oxytettigella, n. n.
Pro *Oxytettix* Ribaut, Bull. Soc. Hist. Nat. Toulouse **77**: 263. 1942.
Nec *Oxytettix* Rehn, Proc. Acad. Nat. Sci. Philadelphia **81**: 482. 1929.
Orthotype: *Jassus viridinervis* Kirschbaum.

Tribe Thamnotettixini

Matsumuratettix, n. n.
Pro *Epitettix* Matsumura, Journ. Coll. Agr. Sapporo **5**: 194. 1914.
Nec *Epitettix* Hancock, Trans. Ent. Soc. London **1907**: 216. 1907.
Orthotype: *Epitettix hiroglyphica* Matsumura.

Subfamily DELTOCEPHALINAE

Tribe Scaphytopini

Osbornitettix, n. n.
Pro *Calotettix* Osborn, Bull. Bernice P. Bishop Mus. 114: 247. 1934.
Nec *Calotettix* Bruner, Biologia Centrali-Americana, Zool. Orth., **2**: 309. 1908.
Orthotype: *Calotettix metrosideri* Osborn.

Rhombopsana, n. n.
Pro *Rhombopsis* Haupt, Bull. Palestine Agr. Exp. Stat. **8**: 22. 1927.
Nec *Rhombopsis* Gardner, Maryland Geol. Surv. Upper Cret.: 456. 1916.
Orthotype: *Rhombopsis virens* Haupt.

According to Neave, Nomenclator Zoologicus **4**: 56, Gardner's name is an unnecessary new name for *Neptunella* Meek, but this would not change the status of Haupt's name.

Tribe Balcluthini

Lindbergana, n. n.
Pro *Nesotettix* Lindberg, Comm. Biol. **6** (9): 6. 1936.
Nec *Nesotettix* Holdhaus, Denkschr. Akad. Wiss. Wien **84**: 555. 1909.
Orthotype: *Nesotettix freyi* Lindberg.

Tribe Macrostelini

Marquesitettix, n. n.
Pro *Marquesia* Osborn, Bull. Bishop Mus. 114: 250. 1935.
Nec *Marquesia* Malloch, Bull. Bishop Mus. 98: 222. 1932.
Orthotype: *Marquesia atra* Osborn.

Family COELIDIIDAE

Subfamily COELIDIINAE

Tribe Coelidiini

Aletta, n. n.
Pro *Palicus* Stål, Hemiptera Africana **4**: 120. 1866.
Nec *Palicus* Philippi, Jahresb. Ver. Nat. Cassel **2**: 11. 1838.
Orthotype: *Coelidia lineoligera* Stål.

Nisitrana, n. n.
Pro *Nisitra* Walker, Journ. Linn. Soc. London, Zool., **10**: 327. 1870.
Nec *Nisitra* Walker, Cat. Dermapt. Saltat. British Mus. **1**: 91. 1869.
Orthotype: *Nisitra telifera* Walker.

Family IASSIDAE

Subfamily IASSINAE

Tribe Selenocephalini

Discocephalana, n. n.
Pro *Discocephalus* Kirschbaum, Jahrb. Ver. Naturk. Nassau **13**: 356. 1858.
Nec *Discocephalus* Ehrenberg, Sym. Phys. Phyt. Sign. c. 1831.
Orthotype: *Discocephalus viridis* Kirschbaum.

Doradana, n. n.
Pro *Dorada* Melichar, Berliner Ent. Zeit. **47**: 276. 1903.
Nec *Dorada* Jarocki, Zoologia **4**: 200. 1822.
Orthotype: *Dorada lativentris* Kuhlgatz and Melichar.

Family IDIOCERIDAE

Zaletta, n. n.
Pro *Macrocerus* Evans, Trans. Roy. Soc. South Australia **65**: 39. 1941.
Nec *Macrocerus* Motschulsky, Bull. Soc. Imp. Nat. Moscow **18** (1): 38. 1845.
Orthotype: *Macrocerus minutus* Evans.

Family CICADIDAE

Subfamily TIBICENINAE

Tribe Tibicenini

Orialella, n. n.
Pro *Oria* Distant, Ann. Mag. Nat. Hist. (7) **14**: 429. 1904.
Nec *Oria* Huebner, Verz. Bekannt. Schmett. (15) 1821: 240. 1821.
Orthotype: *Oria boliviana* Distant.

Tribe Fidicinini

Dorisiana n. n.
Pro *Dorisia* Delétang, Anal. Soc. Cient. Argentina **88**: 63, 65. 1919.
Nec *Dorisia* Moeschler, Verh. zool.-bot. Ges. Wien **32**: 351. 1883.
Orthotype: *Cicada semilata* Walker [= *Cicada viridis* Olivier (nec *Cicada viridis* Linné, id est *Tettigella viridis* Linné)].

Family TIBICINIDAE

Subfamily TIBICININAE

Tribe Dazini

Procollina, n. n.
Pro *Collina* Distant, Biologia Centrali-Americana **1**: 142. 1905.

Nec *Collina* Bonarelli, Boll. Soc. Geol. Ital. **12** (2): 205, 207. 1893.
Orthotype: *Collina biolleyi* Distant.

Tribe Carinetini

Paranistria, n. n.
Pro *Tympanistria* Stål, Ann. Soc. Ent. France (4) **1**: 619. 1862.
Nec *Tympanistria* Reichenbach, Av. Syst. Nat. Text. 1852–53: xxv.
Orthotype: *Tympanistria villosa* Fabricius.

Family MEMBRACIDAE

Subfamily DARNINAE

Tribe Hebesini

Hypheodana, n. n.
Pro *Hypheus* Stål, Öfv. Vet.-Akad. Förh. **24**: 557. 1867.
Nec *Hypheus* Gistel, Syst. Ins. $\bar{1}$ (1): 131. 1838.
Orthotype: *Thelia ursus* Fairmaire.

Subfamily CENTROTINAE

Tribe Hebesini

Acanthicoides, n. n.
Pro *Acanthicus* Laporte, Ann. Soc. Ent. France **1**: 227. 1832.
Nec *Acanthicus* Spix, Pisc. Brazil. **1829**: 2. 1829.
Orthotype: *Acanthicus stollii* Laporte.

Funkhouser, Genera insectorum **208:** 171, states that this genus can not stand because it is based on an immature form. This, however, is contrary to the International Rules of Zoological Nomenclature, Article 27b.

Tribe Uroxiphini

Mesocentrina, n. n.
Pro *Mesocentrus* Funkhouser, Philippine Journ. Sci. **18**: 681. 1921.
Nec *Mesocentrus* Szepligeti, Termés. Füzetek **23**: 56. 1900.
Orthotype: *Mesocentrus pyramidatus* Funkhouser.

Subfamily SMILIINAE

Tribe Ceresini

Melusinella, n. n.
Pro *Melusina* Stål, Öfv. Svenska Vet.-Akad. Förh. **24**: 552. 1867.
Nec *Melusina* Meigen, N. Class. Mouches: 19. 1800.
Orthotype: *Ceresa nervosa* Fairmaire.

Tribe Telamonini

Maturnaria, n. n.
Pro *Maturna* Stål, Öfv. Svenska Vet.-Akad. Förh. **24**: 555. 1867.
Nec *Maturna* Koch, Uebers. Arachnidensyst. **5**: 65. 1850.
Orthotype: *Oxygonia ephippigera* Fairmaire.

Superfamily *FULGOROIDEA

*** Mecynostomata,** n. n.
Pro * *Mecynostoma* Brongniart, Rech. Hist. Ins. Foss. Temps Prim. 451. 1893.
Nec *Mecynostoma* Graff, Monogr. Turbell. **1**: 237. 1882.
Orthotype: * *Mecynostoma dorhni* Brongniart.

Family *FULGORIDAE

*** Nyktalos,** n. n.
Pro * *Nyctophylax* Scudder, Foss. Ins. **2**: 279. 1890.
Nec *Nyctophylax* Fitzinger, Sitzb. Akad. Wiss. Wien, Math.-nat. Cl., **42**: 390. 1860.
Orthotype: * *Nyctophylax uhleri* Scudder.

NAMES TO BE RESTORED

Cyrtoisa Fitch, Ann. Rep. State Cab. Nat. Hist. **4**: 49. 1851.
Logotype: *Cyrtoisa fenestrata* Fitch.

This name was spelled this way by Fitch originally. We have no way of knowing that this is a misspelling, even though Fitch gives the derivation as from the Greek *κυρτός*, curved or hump-backed. He may have been familiar with Perris's *Cyrtosia*, Ann. Soc. Ent. France **8:** 54, 1839, and deliberately reversed the two letters in order to avoid a homonym. *Cyrtolobus* Goding, Trans. Amer. Ent. Soc. **19:** 257, 1892, was proposed as a new name for *Cyrtoisa* [sic] Fitch (nec *Cyrtosia* Perris). Corrections in the original spelling should be avoided as indicated below under the genus *Pseudeoscarta*. *Cyrtolobus* Goding is therefore a synonym of *Cyrtoisa* Fitch.

Errhomenus Fieber, Verh. zool.-bot. Ges. Wien **16**: 501. 1866.
Haplotype: *Errhomenus brachypterus* Fieber.

Puton, Catalogue des hémipterès de la faune Paléarctique, ed. 3: 79, 1886, lists *Errhomenellus* Puton and places *Errhomenus* Fieber (1866) as a synonym, and this has been followed by most subsequent authors. However, as I can find no reason for this, I restore *Errhomenus* Fieber (1866).

Euides Fieber, Verh. zool.-bot. Ges. Wien **16**: 519. 1866.
Logotype: *Delphax basilinea* German.

Puton, Catalogue des Hémiptères de la faune Paléarctique, ed. 3: 72, 1886, lists *Euidella* with *Euides* Fieber (1866) as a synonym. I can find no reason for this unless *Euides* was confused

* This denotes fossil forms.

with *Eueides* Huebner, Verz. bekannt. Schmett. 1816: 11. I therefore restore *Euides* Fieber. *Eueides* Kirkaldy, Entomologist **37:** 175, 1904, will also be a synonym.

Harmonides Kirkaldy, Entomologist **35:** 316. 1902.
Logotype: *Darnis reticulata* Fabricius (= *Parmula bistrigata* Fairmaire).

This name was proposed to replace *Parmula* Fairmaire, Ann. Soc. Ent. France (2) **4:** 490, 1847, nec *Parmula* Heyden, Isis von Oken 1825: 589. Two years later Kirkaldy, Entomologist **37:** 279, 1904, proposed *Boethoos* a new name, for *Parmula* Fairmaire. Since *Harmonides* is the earlier name and, so far as I can discover, has never been used before, it should be restored.

Ophiola Edwards, Ent. Monthly Mag. **58:** 206, 207. 1922. 1949.
Logotype: *Cicada striatula* Fallen:

Oman, Mem. Ent. Soc. Washington **3:** 152, 1949, makes this a synonym of *Scleroracus* Van Duzee based on Van Duzee's statement Can. Ent. **26:** 136, 1894, that there is a specimen in the U. S. National Museum labeled *Scleroracus anthracinus* Uhler. I refuse to accept museum labels, either published or unpublished, as having any standing in nomenclature whatsoever. This, apparently, was Van Duzee's idea, as he described a new species, *Athysanus anthracinus*, based on specimens from Iowa from Prof. Herbert Osborn and from Colorado from Prof. C. P. Gillette, Van Duzee, Can. Ent. **26:** 137, 1894, says: "Prof. Osborn's specimen came labelled *Conogonus gagates*, Ashm., and in the National Museum is an example labelled *Scleroracus anthracinus*, Uhler. I have adopted Mr. Uhler's specific name as very appropriate for this deep black little Jassid, but I can find no characters to separate it generically from *Athysanus.*"

I could argue from this that the genus should be called *Conogonus*, as this name on a museum label has line priority over *Scleroracus* and that the species name *gagates* Ashmead would replace *anthracinus* Van Duzee.

Pseudeoscarta Lallemand, Journ. Federated Malay States Mus. **17:** 375. 1933.
Haplotype: *Pseudeoscarta pendleburyi* Lallemand.

As listed by Neave, Nomenclator Zoologicus **3:** 1003, *Pseudoscarta* is an unnecessary correction for *Pseudeoscarta* Lallemand (1933). Lallemand was apparently establishing a false *Eoscarta*, not a false *Scarta;* hence the elimination of the *o* at the end of *Pseudo* to avoid three vowels following one another. Later Lallemand, Mem. Inst. Royal Sci. Nat. Belgique (2) **32:** 40, 54, 1949, wrote *Pseudoeoscarta.*

ZOOLOGY.—*The marine annelids of the United States Navy Antarctic Expedition, 1947–48.*[1] OLGA HARTMAN, Allan Hancock Foundation, University of Southern California. (Communicated by Fenner A. Chace, Jr.)

A small though interesting collection of polychaetous annelids was collected by Comdr. David C. Nutt, USNR, during the United States Navy Antarctic Expedition, 1947–48. Twenty-nine species, including one new, *Octobranchus phyllocomus*, in 15 families are represented. Most of the specimens come from Marguerite Bay; others are from Ross Island, Knox coast, and vicinity of Peter I Island. Depths range from shore to 115 fathoms. The collections with type specimen are deposited in the United States National Museum; a partial duplicate set is at the Allan Hancock Foundation. The illustrations were prepared by Anker Petersen. I am indebted to the Administration of the Allan Hancock Foundation for permission to examine these materials.

[1] Contribution 87 from the Allan Hancock Foundation, University of Southern California, Los Angeles, Calif.

Family POLYNOIDAE

Barrukia cristata (Willey)

Gattyana cristata Willey, 1902, p. 268, pl. 44, figs. 1–4.
Barrukia cristata Bergström, 1916, pp. 297–299, pl. 5, figs. 7–9, 14.

Localities.—Marguerite Bay, 40 fathoms, water temperature 30°F., Feb. 22, 1948 (1 specimen); 85–105 fathoms, water temperature 30.2°F., Feb. 19, 1948 (1 specimen).

Harmothoë spinosa Kinberg

Harmothoë spinosa Kinberg, 1855, p. 386; Bergström, 1916, pp. 284–286, pl. 2, figs. 5, 6, pl. 3, figs. 1–4.

Localities.—Marguerite Bay, 35 fathoms,

Feb. 20, 1948 (2 specimens), 40 fathoms, Feb. 22, 1948 (4 specimens). Peter I Island, 30 fathoms, Feb. 15, 1948 (7 specimens). Off Point #13 Island, Knox coast, 66°31′ S., 110°26′ E. in 110 fathoms, Jan. 19, 1948 (1 specimen). Off Cape Royds, Ross Island, 58 fathoms, Jan. 29, 1948 (about 10 specimens).

Notes.—Some specimens are very dark on both sides of the body, with parapodia and setae pale; others are checkered instead of dark. These variations agree with some described and shown by Ehlers (1913, pl. 26, colored).

Harmothoë magellanica (McIntosh)

Lagisca magellanica McIntosh, 1885, pp. 82–83, pl. 13, fig. 5, pl. 18, figs. 3, 4, pl. 7a, figs. 1, 2.
Harmothoë magellanica Bergström, 1916, pp. 280–282, pl. 4, figs. 1–3.

Localities.—Marguerite Bay, 35 fathoms, Feb. 20, 1948 (8 specimens); 40 fathoms, Feb. 22, 1948 (about 9 specimens).

Polyeunoa laevis McIntosh

Polyeunoa laevis McIntosh, 1885, pp. 76–77, pl. 12, fig. 2, pl. 20, fig. 8, pl. 7a, figs. 12, 13; Bergström, 1916, pp. 288–291, pl. 3, fig. 7.

Localities.—Marguerite Bay, 35 fathoms, Feb. 20, 1948 (1 specimen); 40 fathoms, associated with arborescent alcyonarians, Feb. 22, 1948 (2 specimens).

Family PHYLLODOCIDAE

Anaitides patagonica (Kinberg)

Carobia patagonica Kinberg, 1865, p. 242.
Anaitides patagonica Bergström, 1914, pp. 147–149, fig. 46.

Locality.—Marguerite Bay, 35 fathoms, Feb. 20, 1948 (1 specimen).

Genetyllis polyphylla (Ehlers)

Phyllodoce polyphylla Ehlers, 1897, pp. 26–28, pl. 1, figs. 14–19.
Genetyllis polyphylla Berystrom, 1914, pp. 161–163, fig. 55.

Locality.—Marguerite Bay, 35 fathoms, Feb. 20, 1948 (1 specimen).

Family SYLLIDAE

Trypanosyllis gigantea (McIntosh)

Syllis gigantea McIntosh, 1885, p. 193, pl. 30, figs. 1–3, pl. 33, fig. 4, pl. 10A, fig. 14, pl. 24A, fig. 7.
Trypanosyllis gigantea Ehlers, 1901, p. 85, pl. 6, figs. 11–16.

Locality.—Marguerite Bay, 35 fathoms, Feb. 20, 1948 (1 specimen).

Syllis brachycola Ehlers

Syllis brachycola Ehlers, 1897, p. 38, pl. 2, figs. 46–47; Monro, 1930, p. 100, figs. 33 a–b.

Locality.—Marguerite Bay, 40 fathoms, Feb. 22, 1948 (about 15 specimens).

Notes.—Some have a pigmented pattern on the dorsum of anterior 15 to 20 segments; there are dark, transverse, segmental bands alternating with similar though medially broken, intersegmental bars. Dorsal cirri are short, with 15 to 20 articles. Composite setae are distally bidentate.

Family NEPHTYIDAE

Aglaophamus macroura (Schmarda)

Nephthys macroura Schmarda, 1861, p. 91, 3 figs.
Aglaophamus macroura Hartman, 1950, pp. 118–120.

Localities.—65°25′ S., 101°13′ E., 100 fathoms, Jan. 14, 1948 (3 specimens). Peter I Island, 30 fathoms, Feb. 15, 1948 (1 specimen).

Family NEREIDAE

Nereis kerguelensis McIntosh

Nereis kerguelensis McIntosh, 1885, p. 225, pl. 35, figs. 10–12, pl. 16A, figs. 17–18; Ehlers, 1897, p. 65, pl. 4, figs. 81–83.

Locality.—Marguerite Bay, 35 fathoms, Feb. 20, 1948 (1 specimen), 40 fathoms, Feb. 22, 1948 (1 specimen).

Family LUMBRINERIDAE

Lumbrineris magalhaensis (Kinberg)

Lumbriconereis magalhaensis Kinberg, 1865, p. 568; 1910, p. 47, pl. 18, fig. 35.
Lumbrineris magalhaensis Hartman, 1948, p. 93, pl. 14, figs. 1–3.

Locality.—Off Cape Royds, Ross Island, 50 fathoms, Jan. 29, 1948 (1 specimen).

Family ORBINIIDAE

Scoloplos (Leodamas) marginatus (Ehlers)

Aricia marginata Ehlers, 1897, p. 95, pl. 6, figs. 150–156.

Locality—Off Cape Royds, Ross Island, 50 and 58 fathoms, Jan. 29, 1948 (about 12 specimens).

Family OPHELIIDAE

Travisia lithophila Kinberg

Travisia lithophila Kinberg, 1866, p. 256; 1910, p. 66, pl. 25, fig. 4.

Locality.—65°25′ S., 101°13′ E., 100 fathoms, Jan 14, 1948 (1 specimen).

Ammotrypane gymnopyge Ehlers

Ammotrypane gymnopyge Ehlers, 1908, p. 118, pl. 17, figs. 1–4.

Locality.—Peter I Island, 30 fathoms, Feb. 15, 1948 (6 specimens).

Family FLABELLIGERIDAE

Flabelligera mundata Gravier

Flabelligera mundata Gravier, 1907, pp. 37–39, pl. 4, figs. 31–32.

Localities.—Marguerite Bay, 115 fathoms, Feb. 18, 1948 (1 specimen), 35 fathoms, Feb. 20, 1948 (7 specimens), 40 fathoms, Feb. 22, 1948 (2 specimens).

Family SCALIBREGMIDAE

Oncoscolex dicranochaetus Schmarda

Oncoscolex dicranochaetus Schmarda, 1861, p. 55, 4 figs., pl. 26, fig. 206.

Locality.—Marguerite Bay, 40 fathoms, Feb 22, 1948 (1 specimen).

Family AMPHARETIDAE

Amphicteis gunneri antarctica Hessle

Amphicteis gunneri antarctica Hessle, 1917, pp. 116–117, pl. 1, fig. 10.

Localities.—66°35′ S., 90°40′ E., 150 fathoms Dec. 30, 1947 (1 specimen). 65°25′ S., 101°13′ E., 100 fathoms, Jan. 14, 1948 (1 specimen). Off Cape Royds, Ross Island, 58 fathoms, Jan. 29, 1948 (1 specimen). Peter I Island, 30 fathoms, Feb. 15, 1948 (14 specimens).

Family TRICHOBRANCHIDAE

Trichobranchus glacialis antarcticus Hessle

Trichobranchus glacialis antarcticus Hessle, 1917, p. 132.

Locality.—Off Cape Royds, Ross Island, 50 fathoms, Jan. 29, 1948 (1 specimen).

Notes.—There are three pairs of filiform branchiae that resemble one another. The peristomial ring is plain; it lacks eyespots. The body cavity is crowded with ova.

Octobranchus phyllocomus, n. sp.

Figs. 1–12

Type.—U.S.N.M. no. 23771.

Locality.—Off Cape Royds, Ross Island, 50 fathoms, Jan. 29, 1948 (1 specimen).

The single specimen is posteriorly incomplete; it measures 20 mm long and 3.3 mm wide in front at the postbranchial region of the body. It consists of the head region, 16 thoracic and 6 abdominal setigerous segments. Preserved the body is pale or white, except for the dark eye spots that are strewn on the peristomial collar.

The most striking feature concerns the foliaceous character of the branchiae, especially the second pair (Fig. 5); they resemble those in the ampharetid genus *Phyllocomus* Grube; hence the specific name. The thoracic uncini are long-handled, and in other respects this individual agrees with members of the family Trichobranchidae.

The oral tentacles are very numerous and filiform except for their tips, which are longitudinally grooved and somewhat spatulate. They form a dense tuft at the anterior end of the body. They are of varying length; the longest are on the ventral, the shortest on the dorsal side. The membrane to which the tentacles are attached is U-shaped around the oral aperture; it is completely covered except for a pair of free lateral lobes at the sides of the mouth.

The lateral lobes (Fig. 1) of the thorax consist of four well-developed pairs. All are continued across the ventrum as smooth-margined, collar membranes. The first pair is the smallest; it is ventrolateral in position and largely concealed by the much larger second pair. Its base can be followed dorsally to that of the first branchial pair. The second lateral lobes are the largest and most prolonged in their lateral parts; they extend across the ventrum as the longest collar membrane; their upper bases can be traced in line with the bases of the second branchial pairs. The third lateral lobes resemble the second pair but are somewhat smaller and slightly more ventral; their bases are in line with the bases of the third branchial pairs. The fourth lateral lobes are increasingly smaller and slightly ventrolateral in position; the expanded upper part is below the first notopodial fascicle and its base in line with that of the fourth branchial pair.

The peristomial base is strewn with many dark eyespots, most numerous at the sides of the body; the eyes are not seen unless the large

lateral lobes of the second pair are pushed to one side.

Branchiae are dorsal, number four pairs, and are inserted between the bases of the lateral lobes. All are similar in that each consists of a basal foliaceous part terminating distally in a slender filament. The first pair is inserted far in front of and within the others; its proportions are shown in Fig. 4. The second pair is lateralmost; it is broadest and subquadrate in its basal part (Fig. 5). The third (Fig. 6) and fourth (Fig. 7) pairs are similar to each other, but the third is the larger and terminates in a longer filament. Striking features of all branchial pairs are the bilimbate character of the basal parts and the richly branched circulatory vessels which can be seen through the membranous epithelium.

There are 16 thoracic setigerous segments. The first notopodia are smallest and slender-conical in shape; they are provided with a bundle of slender setae directed distally. The second notopodia are larger and heavier than the first; farther back they come to be compressed, triangular processes (Fig. 2) and have transverse series of setae between their presetal and postsetal lobes. Thoracic setae consist of about seven larger, broader and eight slenderer, shorter ones in a single transverse series.

Thoracic uncini are first present from the fifth setigerous segment, at first arranged in a short, transverse series; farther back the row increases in length. The uncini (Fig. 8) are of a single kind and number 15 to 25 in a row. Each consists of a long handle that terminates distally in a fang surmounted by a rostrate series of transverse ridges (Figs. 9, 10).

Only a few abdominal segments are present on the single specimen. Abdominal parapodia are lateral in position; each is in the form of a rectangular plaque (Fig. 3) with the uncini arranged in a single series at the outer distal margin. The uncini number about 30 in a row. They are all similar, avicular, lack a handle. Seen individually (Fig. 11) each consists of a thin subcircular plate with a major fang surmounted by two transverse rows of smaller teeth, the middle one with about five teeth, the distal one with about eight smaller ones (Fig. 12).

The genus *Octobranchus* Marion and Bobretzky is a group of few species (see Hessle, 1917, p. 134); they include *O. antarcticus* Monro (1936, pp. 185–187, fig. 33) from south Georgia, *O. japonicus* Hessle (1917, pp. 134–135, pl. 1, figs. 13–15) from Japan and *O. lingulatus* (Grube) (1863, pp. 56–57, pl. 6, fig. 1) from the Mediterranean Sea. In these the branchiae are said to be filiform (Monro, 1936, p. 185). *O. phyllocomus* departs from the other species in that the second pair of branchiae is conspicuously foliaceous.

O. antarcticus Monro (1936, pp. 185–186) is known from a single, imperfect individual from Schollaert Channel, Palmer Archipelago, 278–500 meters, mud bottom. The tentacles and all except a fourth pair of branchiae were lost when the original description was made. The lateral lobes resemble those of the present species but are less developed in their lateral parts. The first notopodia are on the last branchial segment and uncini begin on the fourth setigerous segment.

Family TEREBELLIDAE

Terebella ehlersi Gravier

Terebella ehlersi Gravier, 1907, pp. 47–50, text figs. 30–31, plate figs. 45–46.

Localities.—Marguerite Bay, 35 fathoms, Feb. 20, 1948 (1 specimen); 40 fathoms, Feb. 22, 1948 (several specimens).

Notes.—The greatest length is about 70 mm. The peristomial ring shows no eye spots, but they are supposedly present (Hessle, 1917, p. 190). Notosetal fascicles of pointed setae are present on many (to 47) or fewer segments; the fascicles decrease in size going back and gradually disappear on 20 or more posterior segments. Ventral gland shields occur on 15 segments. There are no lateral lappets. A prominent nephridial papilla is present on each side, between the bases of the first and second branchiae. Notosetae are conspicuously winged at their distal ends. The tubes are thick, more or less mud-walled to irregularly covered with detritus.

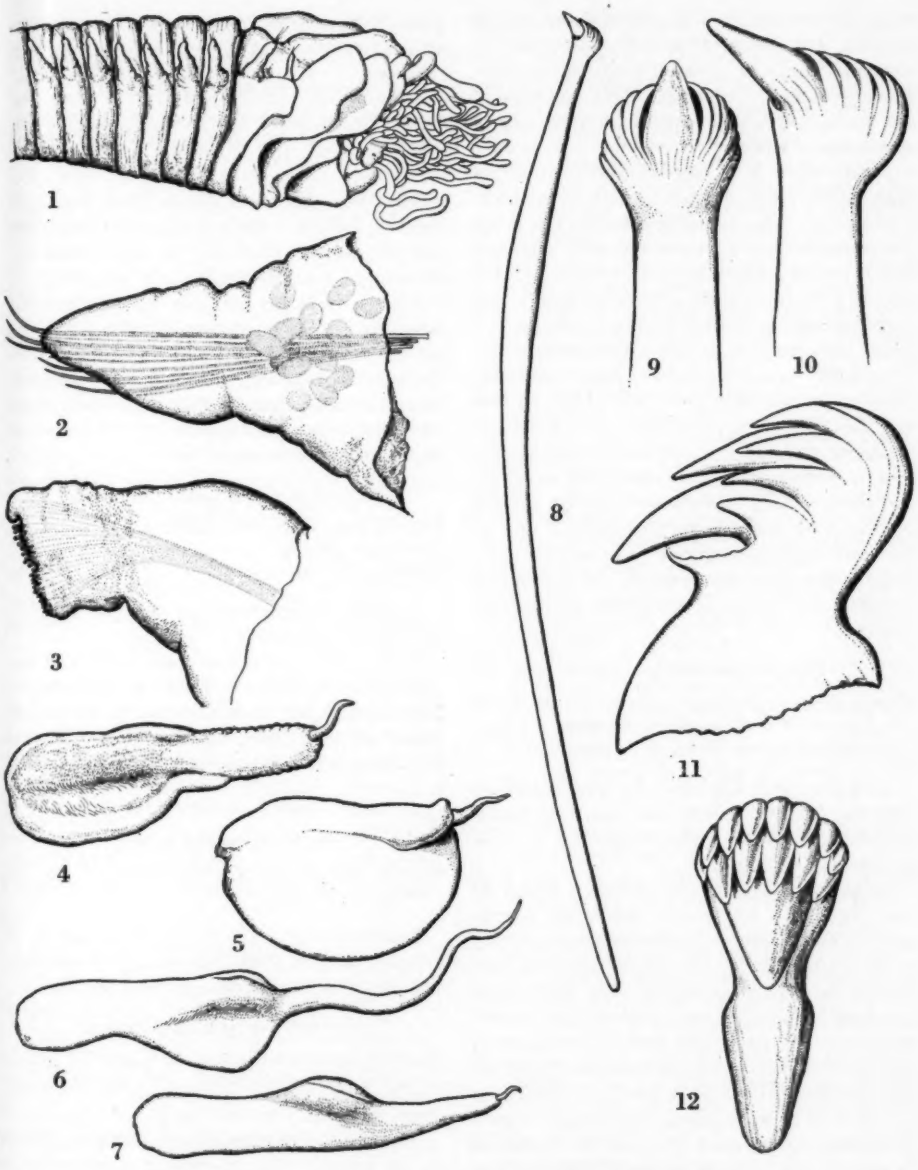
Pista corrientis McIntosh

Pista corrientis McIntosh, 1885, pp. 457–458, pl. 48, fig. 11, pl. 27A, fig. 35; Hessle, 1917, pp. 158–159, pl. 2, figs. 2–3.

Locality.—Off Cape Royds, Ross Island, 58 fathoms, Jan. 29, 1948 (1 specimen).

Lanicides vayssierei (Gravier)

Terebella (Phyzelia) vayssierei Gravier, 1911, pp. 130–133, pl. 10, figs. 121–123, pl. 11, figs. 134–135.
Lanicides vayssieri Hessle, 1917, pp. 166–167.



(Reductions in magnifications are made for a base line measuring 5½ inches.)

FIGS. 1–12. *Octobranchus phyllocomus*, n. sp. (holotype: U. S. N. M. no. 23771): 1, Anterior end seen from the right side, ×7; 2, fourteenth thoracic notopodium, ×49; 3, third abdominal parapodium, ×49; 4, first branchia, ×17.4; 5, second branchia, ×17.4; 6, third branchia, ×17.4; 7, fourth branchia, ×17.4; 8, thoracic uncinus, ×44.3; 9, distal end of thoracic uncinus, seen from front, ×1856; 10, distal end of thoracic uncinus, seen from side, ×1856; 11, abdominal uncinus, seen from side, ×2935; 12, abdominal uncinus, seen from front, ×2935.

Localities.—Off Cape Royds, Ross Island, 50 fathoms, Jan. 29, 1948 (several specimens); 58 fathoms, Jan. 29, 1948 (many specimens). Marguerite Bay, 35 fathoms, Feb. 20, 1948 (2 specimens); 40 fathoms, Feb. 22, 1948 (many specimens in tubes).

Notes.—This is a large species and forms aggregated masses of tubes. Length of the body is 75 mm or more and width is 8 mm. The tubes are considerably larger, to 120 mm long and about 13 mm across; they are composed of a smooth cylindrical lining covered over with fine mud; some have needlelike sponge spicules and other extraneous materials interwoven in the outer layers so that the tube appears irregularly spinous. Conspicuous characters of the species are the two pairs of dendritically branched branchiae, the single pair of large lateral lappets that occur on the second branchial segment, and the two pairs of nephridial papillae present on the posterior side of notopodia 3 and 4. Thoracic segments number 17 setigerous ones. Some of the specimens have the redia stage of a digenetic trematode in the posterior coelomic spaces.

Leaena ?wandelensis Gravier

Leaena wandelensis Gravier, 1907, pp. 50–52, pl. 5, figs. 47–48, text figs. 32–34; Benham, 1927, pp. 107–111, pl. 2, figs. 61–69, pl. 6, figs. 189–190.

Localities.—Off Cape Royds, Ross Island, 58 fathoms, Jan. 29, 1948 (1 specimen with tube). 65°25′ S., 101°13′ E., 100 fathoms, Jan. 14, 1948 (1 specimen in tube).

Notes.—The larger tube measures about 80 mm long and has many needlelike sponge spicules incorporated with fine detrital materials in its external walls. The smaller tube has proportionately more sponge spicules. Both tubes are long, cylindrical, very slender, and closely fitting the occupant. The thorax has numerous eye spots, limited largely to the sides. There are no branchiae. The oculate area is concealed by a pair of large lateral flaps that extend forward from the next segment. The specific identity is in some doubt since the uncini differ from those originally shown. They are avicular with a main fang that is very large, surmounted by a fang of smaller size and this by several smaller denticles in rostrate arrangement. In this respect they are more nearly like those of *Leaena arenilega* Ehlers (1913, p. 564, pl. 44, fig. 13) from Kaiser Wilhelm-II-Land, a species which Benham (1927) regards conspecific with *L. wandelensis* Gravier.

Thelepus cincinnatus (Fabricius)

Amphitrite cincinnata Fabricius, 1780, pp. 286–287.
Thelepus cincinnatus Hessle, 1917, pp. 212–214 (with synonymy).

Localities.—Off Cape Royds, Ross Island, 58 fathoms, Jan. 29, 1948 (1 specimen). Marguerite Bay, 35 fathoms, Jan. 20, 1948 (2 specimens); 40 fathoms, Jan. 22, 1948 (many specimens).

Notes.—The tubes resemble those of *Lanicides vayssierei* (above) but have a tougher lining and are proportionately slenderer. The surface of the body is coarsely granular owing to the presence of epithelial glands. Notopodial setal tufts are present on many segments and continued back to near the posterior end.

Polycirrus kerguelensis (McIntosh)

Ereutho kerguelensis McIntosh, 1885, p. 474, pl. 28A, figs. 20, 21.
Polycirrus kerguelensis Hessle, 1917, pp. 221–224.

Locality.—Marguerite Bay, 40 fathoms, Feb. 22, 1948 (1 specimen).

Notes.—The single individual is about 18 mm long; it has 11 thoracic setigerous segments, as Hessle found, not 13 as described by McIntosh. There are three long, digitate nephridial lobes on each side of setigerous segments 4, 5, and 6.

Family SABELLIDAE

Euchone pallida Ehlers

Euchone pallida Ehlers, 1908, p. 159, pl. 21, figs. 10–15, pl. 22, figs. 1–4.

Localities.—Off Cape Royds, Ross Island, 50 fathoms, Jan. 29, 1948 (1 specimen); 58 fathoms, Jan. 29, 1948 (3 specimens with tubes).

Potamilla antarctica (Kinberg)

Laonome antarctica Kinberg, 1867, p. 354.
Potamilla antarctica Gravier, 1907, pp. 59–62, figs. 38–43.

Localities.—Off Burton Rock, 66°15′ S., 95°20′ E., 43 fathoms, Jan. 3, 1948 (1 specimen). Off Cape Royds, Ross Island, 58 fathoms, Jan. 29, 1948 (several specimens in tubes). Off Point ✱13 Island, Knox coast, 66°31′ S., 110°26′ E., 110 fathoms, Jan. 19, 1948 (1 specimen). Marguerite Bay, 35 fathoms, Feb. 20, 1948 (1 specimen); 40 fathoms, Feb. 22, 1948 (1 specimen).

Notes.—Some of the larger individuals meas-

ure about 160 mm long. The tubes are translucent, horny, and cylindrical and measure about 200 mm long at most; they closely surround the occupant and taper posteriorly to a conical closed end. In the larger specimens the pygidial lobe is pale white, with few or no dark eye spots; in smaller, presumably younger individuals of the same species the terminal lobe has many irregularly strewn reddish or dark eye spots. The thorax has eight setigerous and the abdomen 100 or more segments. The tentacular radioles are very long, numerous, 25 to 30 on a side; each terminates distally in a long, smooth tip that surpasses the length of the individual filaments. The thoracic collar lacks dorsal lobes; it has lateral lobes and long, oblique ventral ends. Thoracic notosetae are of 2 kinds; the superior ones are longer and slenderer than the abruptly different, mucronated inferior ones.

Family SERPULIDAE

Serpula vermicularis narconensis Baird

Serpula narconensis Baird, 1865, p. 21, pl. 2, figs. 7, 8.

Serpula vermicularis Gravier, 1911, pp. 147–148, pl. 12, figs. 170–175.

Localities.—66°35′ S., 90°40′ E., 150 fathoms, Dec. 30, 1947 (several tubes). Off Cape Royds, Ross Island, 58 fathoms, Jan. 29, 1948 (many tubes). Off Point #13 Island, Knox coast, 110 fathoms, Jan. 19, 1948 (2 tubes). Marguerite Bay, 115 fathoms, Feb. 18, 1948 (tube fragments); 85–105 fathoms, Feb. 19, 1948 (several tubes); 35 fathoms, Feb. 19–20, 1948 (many tubes); 40 fathoms, Feb. 22, 1948 (several specimens with tubes).

Spirorbis spp.

Locality.—Off Cape Royds, Ross Island, 58 fathoms, Jan. 29, 1948 (several specimens).

Notes.—There are several coiled tubes, adherent to those of *Serpula vermicularis narconensis* (above) and algal strands. The aperture is sinistral; the upper surface has three longitudinal ridges. The individual coils measure 1 or 2 mm across.

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NEMATOLOGY.—*A new roundworm*, Capillaria pirangae (*Nematoda: Trichinellidae*), *from the scarlet tanager*, Piranga erythromelas.

CHARLES G. DURBIN, U. S. Bureau of Animal Industry. (Communicated by E. W. Price.)

Two males and one mature female nematodes of the genus *Capillaria* were recovered from the small intestine of a scarlet tanager, *Piranga erythromelas*, caught at the Agricultural Research Center, Beltsville, Md.

An examination of the specimens of *Capillaria* in the U. S. National Museum Helminthological Collection showed no specimens that had been obtained from the scarlet tanager, and a review of the pertinent literature (Cram, 1925; Teixera de Freitas and Luis de Almeida, 1934, 1935; Madsen, 1945, 1951; Lopez-Neyra, 1947) shows that, except for Read's (1949) report, there are no records of any capillarids having been collected from this host. Read (*loc. cit.*) reported finding two immature female capillarids in the small intestine of a scarlet tanager at Madison and Shawano, Wis. He was unable to determine the species because the specimens were immature. However, a study of Read's description and illustrations shows clearly that the capillarids collected from the scarlet tanager in Wisconsin differ from those that form the subject of the present note.

Capillaria pirangae, n. sp.

Description.—Cuticle transversely striated Lateral bacillary lines present. Mouth simple.

Male.—13 mm long, maximum width 55 μ. Spicule smooth with a blunt tip, 1.55 mm long by 15 μ wide; spicule sheath covered with minute spines. Lateral caudal alae absent. The tail ends in a bilobed membranous bursa, each lobe supportedby a stout ray (Fig. 1, B). Cloaca subterminal.

Female.—18 mm long by 50 μ wide just anterior to the vulva; maximum width 65 μ. No prevulvar notch or cuticular bosses present. Well-developed funnel shaped vulvar appendage present (Fig. 1, A). Anus subterminal. Vulva divides the body 1:2.2. Eggs, 60–65 μ long; 25–30 μ wide; outer shell with longitudinal folds (Fig. 1, A).

Host.—*Piranga erythromelas.*

Location.—Small intestine.

Locality.—Beltsville, Md.

Type specimens.—Female, holotype; male, allotype U. S. N. M. Helm. Coll. no. 46938.

Remarks.—The female most closely resembles *C. quiscali* Read, 1949, but differs from it in the shape of the vulvar appendage. In *C. quiscali* the base of the vulvar appendage is long and elevated whereas in *C. pirangae* the base of the appendage is narrow. The surface of the eggs of *C. quiscali* are roughly mammilated whereas those of *C. pirangae* have longitudinal folds. The male bears

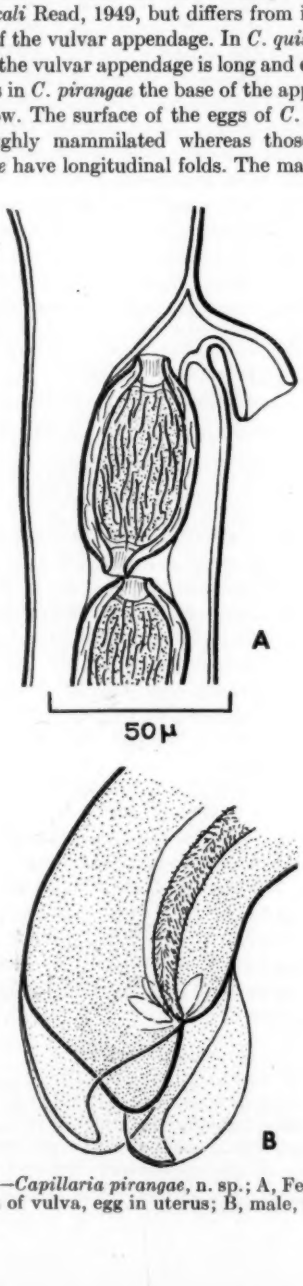

FIG. 1.—*Capillaria pirangae*, n. sp.; A, Female, region of vulva, egg in uterus; B, male, tail.

some resemblance to *C. collaris* (v. Linstow, 1873), but differs from it in the shape of the spicule and the absence of a spine on its tip.

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HERPETOLOGY.—*A new Philippine snake of the genus Calamaria.* ALAN E. LEVITON, Natural History Museum, Stanford University. (Communicated by Doris M. Cochran.)

Several years ago while identifying the snakes collected by Dr. Albert W. Herre during his Philippine Expedition of 1940, I noted a specimen belonging to the genus *Calamaria* that was not identifiable with any previously described species, and appeared to be a new form. I decided not to describe the new snake immediately but to wait until it would be possible to review the entire genus, rather than add to the existing confusion. Plans were outlined to study the genus as a whole, but inasmuch as completion of a generic review must now be postponed because of inadequacy of available material, it seems best to publish a description of this snake without further delay.

Calamaria zamboangensis, n. sp.

Holotype.—SU reptile register no. 13476, male, collected by Dr. Albert W. Herre, at Zamboanga, Mindanao Island, Philippine Islands, September 2, 1940, during the Herre Oriental Expedition of 1940.

Paratype.—SU 13477; same data as holotype except as otherwise mentioned.

Diagnosis.—This species can be distinguished from all previously described forms of *Calamaria* by the combination of the following characteristics: Mental shield not in contact with anterior genials, diameter of eye less than its distance to mouth, frontal only twice as broad as supraocular, preocular and postocular shields present, anal entire. *C. zamboangensis* is distinguished from *albopunctata* by a considerably lower ventral count (201–203 V. in *zamboangensis*, 247 V. in *albopunctata*), and from *quinquetaeniata* by a higher ventral and lower subcaudal count (*zamboangensis*, 201–203 V., 12–13 C.; *quinquetaeniata*, 178 V., 26 C.). It differs from *egregia* in the smaller proportions of the frontal shield width vs. supraocular shield width, the smaller number of subcaudal shields, five supralabials, and by the subequal size of the third and fourth supralabials (*egregia* has the frontal shield three times the width of the supraocular, 16 subcaudal shields, 6 supralabials, and the fourth upper labial smaller than the third); and from *brachyura* by the smaller eye and different coloration.

Description.—Diameter of the eye distinctly less than its distance from the mouth; rostral broader than deep; internasals absent. The frontal is slightly longer than wide, twice as broad as the supraocular, somewhat shorter than the parietals. There are five supralabials, the third and fourth entering the eye and subequal in size. The first and second upper labials in contact with the prefrontal, the fifth with the parietal. Nostril in a small nasal; loreal absent; 1 preocular and 1 postocular; temporals absent. The mental shield is not in contact with the anterior chin shields, the first infralabial meeting its fellow behind the mental. There are five infra-

labials, the first three in contact with the anterior chin-shield; the posterior chin-shields smaller than and in contact with the anterior shields.

Ventrals 201–203 (holotype 201); subcaudals 12–13 (holotype 12); anal single; scales in 13–13–13 rows.

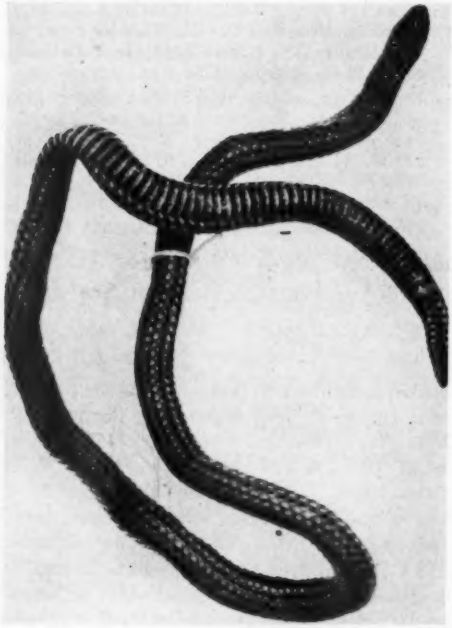

FIG. 1.—Holotype of *Calamaria zamboangensis*, S.U. no. 13476. (Photograph by Antenor L. de Carvalho and the author.)

Coloration (specimen preserved in formalin and then in alcohol).—The ground color is light brown; there are six dark brown stripes dorsally formed by a series of coalescing spots. These stripes are distributed as follows: One between the first and second scale rows, one on the third row, one between the fourth and fifth rows. Immediately behind the head and extending for about one fifth of the body length there are two additional stripes (longitudinal series of spots), one on the sixth scale row and one on the eighth row, but these fade out rapidly on the body. The head is more or less uniform brown, this color extending onto the upper edges of the supralabials; the remainder of the supralabials are yellowish brown.

Ventrally the throat and anterior portion of the body are uniform light yellow-brown. About one-fifth of the body length posterior to the head the inner edges of the ventrals become darker brown while the outer edges remain a light color. This pattern extends onto the tail. There is a median dark line running down the length of the tail.

Measurements (holotype).—Total length 248 mm, snout to vent 237 mm, tail length 11 mm.

Remarks.—The paratype agrees with the holotype in the color pattern, although its color has faded considerably.

C. zamboangensis appears to be closely related to *C. egregia* Barbour but can readily be distinguished from this species as shown in the diagnosis. With the accumulation of additional evidence this new species may prove to be conspecific with *egregia*, but unfortunately the lack of material prevents the determination of the exact relationship between these two species.

There are three other species of *Calamaria* to which the new form bears a resemblance—*everetti*, *virgulata*, and *occipitalis*. However, these three species can be distinguished from *zamboangensis* as follows: *everetti* has the diameter of the eye greater than its distance from the mouth, *virgulata* has the diameter of the eye equal to its distance from the mouth and a somewhat different coloration, and *occipitalis* which has a divided anal plate.

Acknowledgments —I express my sincere thanks to Dr. Walter C. Brown, of Northwestern University, who has been kind enough to reexamine a considerable portion of the data presented here, to Prof. George S. Myers, of Stanford University, for reading the manuscript and offering some valuable criticisms, and to Charles M. Bogert for the loan of the entire collection of *Calamaria* in the American Museum of Natural History for study and comparison.

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